DEPARTMENT OF TRANSPORTATION
ESC/OE MS #43
1727 30TH Street, 2ND Floor
Sacramento, CA 95816

October 20, 2000

04-CC,Sol-80-19.5/22.7,0.0/0.7
04-013054

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in CONTRA COSTA AND SOLANO COUNTIES IN CROCKETT AND VALLEJO FROM OLEUM REFINERY ROAD UNDERCROSSING TO CARQUINEZ BRIDGE TOLL PLAZA.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on November 15, 2000, instead of the original date of November 1, 2000.

This addendum is being issued to set a new bid opening date as shown herein and revise the Project Plans, the Notice to Contractors and Special Provisions and the Proposal and Contract.

Project Plan Sheets 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17, 20, 21, 22, 37, 40, 74, 79, 83, 84, 85, 86, 89, 93, 100, 102C, 103, 106, 113A, 114, 115, 116, 117, 119, 120, 121, 129, 130, 131, 132, 136, 137, 138, 139, 140, 141, 142, 143, 159, 180, 184, 197, 203, 205, 206, 207, 208, 209, 210, 211, 226, 227, 228, 230, 238, 273, 339, 347, 388, 390, 402, 654, 655, 656, 688, 690, 822, 824, 833, 911, 955, 957, 973, 1027, 1028, 1043 and 1047 are revised. A half-sized copy of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheets 72A, 87A, 96A, 102A, 102B, 158A, 163A, 924A, and 924B are added. A half-sized copy of the added sheets are attached for addition to the project plans.

Project Plan Sheets 30, 53, 76, 102, 151, 152, and 153 are deleted.

In the Notice to Contractors and Special Provisions, the "A + B BIDDING SPECIAL NOTICE" is revised as attached.

In the Special Provisions, Section 3, "AWARD AND EXECUTION OF CONTRACT," is revised as attached.

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," is revised as attached.

In the Special Provisions, Section 5-1.30, "AVAILABLE EXISTING DOCUMENTS," the first paragraph is revised as follows:

"The following items are available for inspection at Department of Transportation at 111 Grand Avenue, Oakland, California 94612:

As-Builts for the 1958 Bridge.
As-Builts for the 1927 Bridge.
Foundation Recommendation for the New Crockett Interchange Retaining Walls R1 and R2.
Foundation Recommendation Westbound On-Ramp Wall R3.
Foundation Recommendation , Vista Del Rio Wall 4.

Supplemental Foundation Recommendations for the Crockett Interchange (West of Existing Bridge).

Foundation Recommendations for Crockett Interchange Viaduct, Westbound On-Ramp, Westbound Off-Ramp, and Eastbound Off-Ramp.

South Anchorage Pile Field Acceptance Criteria, Pile Dynamic Analysis, and Pile Load Test Results.

Bent 7 Pile Field Acceptance Criteria, Pile Dynamic Analysis, and Pile Load Test Results.

Crockett Viaduct Driveability Analysis.

Westbound Off-Ramp Driveability Analysis.

Contract Plans and Specifications for the New Carquinez Bridge Project (EA# 04-013014).

Foundation Report for the New Carqinez Bridge Project (EA# 04-013014)."

In the Special Provisions, Section 10-1.05, "TEMPORARY CREEK DIVERSION SYSTEM," is deleted.

In the Special Provisions, Section 10-1.13, "TEMPORARY FENCE (TYPE ESA)," is deleted.

In the Special Provisions, Section 10-1.18, "PROGRESS SCHEDULE (CRITICAL PATH)," the third paragraph is revised as follows:

"**PRECONSTRUCTION SCHEDULING CONFERENCE**

The Engineer shall schedule and conduct a Preconstruction Scheduling Conference with the Contractor's Project Manager and Construction Scheduler within seven days after the bidder has received the contract for execution. At this meeting, the requirements of this section of the special provisions will be reviewed with the Contractor. The Contractor shall be prepared to discuss its schedule methodology, proposed sequence of operations, the activity identification system for labeling all work activities, the schedule file numbering system, and any deviations it proposes to make from the Stage Construction Plans."

In the Special Provisions, Section 10-1.18, "PROGRESS SCHEDULE (CRITICAL PATH)," subsection "EQUIPMENT AND SOFTWARE," the first paragraph is revised as follows:

"**EQUIPMENT AND SOFTWARE**

The Contractor shall provide for the State's exclusive possession and use a complete computer system specifically capable of creating, storing, updating and producing CPM schedules. Before delivery and setup of the computer system, the Contractor shall submit to the Engineer for approval a detailed list of all computer hardware and software the Contractor proposes to furnish. The minimum computer system to be furnished shall include the following:

A. Complete computer system, including keyboard, mouse, 20 inch color SVGA monitor (1024x768 pixels), Intel Pentium III 850 MHz microprocessor chip, or equivalent;

B. Computer operating system software, compatible with the selected processing unit, for Windows 95 or later or equivalent;

C. Minimum one-twenty-eight (128) megabytes of random access memory (RAM);

D. A 6.4 gigabytes minimum hard disk drive, a 1.44 megabyte 3 1/2 inch floppy disk drive, 32x speed minimum CD-ROM drive, Ethernet card and 56k modem;

E. A color-ink-jet plotter with a minimum 36 megabyte RAM, capable of 300 dots per inch color, 600 dots per inch monochrome, or equivalent, capable of printing fully legible, time scaled charts, and network diagrams, in four colors, with a minimum size of 36 inches by 48 inches (E size) and is compatible with the selected system, an HP Design Jet 1055 CM or equivalent, plotter stand, roll paper assembly and automatic paper cutter, and provide plotter paper and ink cartridges throughout the contract;

F. CPM software shall be Primavera Project Planner, the latest version for Windows 95, or later;

G. Scheduler Analyzer Pro or equivalent (a suite of programs to assist in schedule analysis) in the latest version for Windows 95, Windows NT or later; and

H. Microsoft Office Software, the latest version for Windows 95, Windows NT or later and McAfee Virus software or equivalent."

In the Special Provisions, Section 10-1.19, "OVERHEAD," is revised as attached.

In the Special Provisions, Section 10-1.21, "OBSTRUCTIONS," is revised as attached.

In the Special Provisions, Section 10-1.29, "PORTABLE CHANGEABLE MESSAGE SIGN," the second paragraph is revised as follows:

"Portable changeable message signs shall be on the project at all times and available for public awareness information purposes as directed by the Engineer."

In the Special Provisions, Section 10-1.35, "RAISE BRIDGE," subsection "REMOVE CONCRETE," is revised to Section 10-1.36, "REMOVE CONCRETE."

In the Special Provisions, Section 1.36, "REMOVE CONCRETE," the first paragraph is revised as follows:

"Concrete, where shown on the plans to be removed, shall be removed and shall conform to the provisions in Section 15, "Existing Highway Facilities" of the Standard Specifications and these special provisions."

In the Special Provisions, Section 10-1.38, "EARTHWORK," the following paragraph is added after the fourth paragraph:

"Full compensation for shoring as required at Retaining Wall R-1 shall be considered as included in the contract price paid per cubic meter for roadway excavation and no separate payment/additional compensation will be made/allowed therefor."

In the Special Provisions, Section 10-1.55, "PILING," subsection "CAST-IN-DRILLED-HOLE CONCRETE PILES," is revised as attached.

In the Special Provisions, Section 10-1.55, "PILING," subsection "SLURRY," is revised as attached.

In the Special Provisions, Section 10-1.56, "STEEL SOLDIER PILING," subsection "MEASUREMENT AND PAYMENT (PILING)," the following paragraph is added after the eighth paragraph:

"Excavation of open ended steel shells beyond the limits shown on the plans shall be backfilled with concrete fill. Full compensation for backfilling the open ended steel shells with concrete fill beyond the limits shown on the plans shall be considered as included in the contract unit price paid for drive pile and no additional compensation will be allowed therefor."

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In the Special Provisions, Section 10-1.56, "STEEL SOLDIER PILING," the section heading "Section 10-1.56 STEEL SOLDIER PILING," is revised to subsection heading "STEELSOLDIER PILING."

In the Special Provisions, Section 10-1.60, "CONCRETE STRUCTURES," subsections "TEMPORARY HINGE TIEDOWNS," "DRILL AND BOND DOWEL (EPOXY CARTRIDGE)" and "MEASUREMENT AND PAYMENT," are added as attached after subsection "ELASTOMERIC BEARING PADS."

In the Special Provisions, Section 10-1.64, "ARCHITECTURAL SURFACE (TEXTURED CONCRETE)," is revised as attached.

In the Special Provisions, Section 10-1.75, "ISOLATION CASINGS," is revised as attached.

In the Special Provisions, Section 10-1.98, "BRIDGE DECK DRAINAGE SYSTEM," the following paragraph is added after the second paragraph:

"Stainless steel plate shall conform to the requirements in ASTM Designation: A 276 Type 316."

In the Special Provisions, Section 10-1.72, "WELDED HEADED BAR REINFORCEMENT," the section heading "Section 10-1.72, "WELDED HEADED BAR REINFORCEMENT," is revised to subsection heading "WELDED HEADED BAR REINFORCEMENT."

In the Special Provisions, Section 10-1.108, "SURVEY OF EXISTING NON-HIGHWAY FACILITIES," is added as attached.

In the Special Provisions, Section 10-2.04, "HIGHWAY PLANTING," subsection "PLANT ESTABLISHMENT WORK," the first paragraph is revised as follows:

"**PLANT ESTABLISHMENT WORK**
The plant establishment period shall be Type 2 and shall be not less than 1100 working days."

In the Special Provisions, Section 10-6.01, "AIR AND WATER LINES," is added as attached.

In the Special Provisions, Section 10-6.02, "MODIFY BRIDGE WATER LINE," is added as attached.

In the Proposal and Contract, the Engineer’s Estimate Items 8, 10, 20, 21, 23, 24, 30, 40, 41, 58, 68, 69, 79, 82, 102, 103, 107, 108, 125, 126, 127, 128, 142, 151, 152, 182, 184, 187, 189, 190, 194, 198, 199, 200, 201, 202, 204, 208, 214, 228, 231, 232, 233, 236, 258, and 259 are revised, Items 261, 262, 263, 264, and 265 are added and Items 1, 13, 143, and 260 are deleted as attached.

To Proposal and Contract book holders:

Replace the entire Engineer's Estimate in the Proposal with the attached revised Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Attached is a copy of the Material Information, California Department of Fish and Game Permit.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

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This office is sending this addendum by UPS overnight mail to Proposal and Contract book holders to ensure that each receives it.

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

NICK YAMBAO, Chief
Office of Plans, Specifications & Estimates
Division of Office Engineer

Attachments

A + B BIDDING
SPECIAL NOTICE

The bidder's attention is directed to Section 2, "Proposal Requirements and Conditions," Section 3-1.01B, "Award and Execution of Contract," and Section 4, "Beginning of Work, Time of Completion and Liquidated Damages," in the special provisions. In addition to the item prices and totals, the proposal shall set forth the number of working days bid to complete all the Phase II work (except plant establishment work). Working days are defined in Section 4. All bids will be compared on the basis of the sum of the Engineer's Estimate of the quantities of work to be done (TOTAL BID (A)), plus the product of the number of working days bid to complete all the Phase II (except plant establishment work) work and the cost per day shown on the Engineer's Estimate (TOTAL BID (B)). The lowest bid will be determined on the basis of the "Total Basis for Comparison of Bids" set forth in the Engineer's Estimate.

Bids in which the number of working days bid exceed 610 for all the Phase II (except plant establishment work) **work will be considered non-responsive and will be rejected.**

The bidder's attention is also directed to the provisions in Section 4 of the special provisions regarding liquidated damages. The total number of working days to complete all work in the contract shall be the number of working days bid plus 800 days excluding working days when only plant establishment is to be performed.

No incentive payments will be paid nor will disincentive deductions be charged on this project.

For purposes of determining liquidated damages, all work must be completed for a given Phase and the contract accepted by the Director, as specified in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications.

Examples of determining liquidated damages for Phase I work are as follows:

Completing all the work in Phase I, at 11:55 p.m. on day 800 shall be deemed completing all the work in Phase I shown on the project plans on day 800.

Completing all the work in Phase I, at 12:05 a.m. on day 801 shall be deemed completing all the work in Phase I shown on the project plans on day 801.

Examples of determining liquidated damages for Phase I working days and Phase II work bid (except plant establishment work) are as follows:

Contractor bids 600 working days for Phase II work (except plant establishment work). The contractor has been notified that the New Carquinez Bridge (contract 04-013014) is ready to accept traffic on day 790. The contractor has 1400 (800 plus 600) working days to completely finish Phase II work (except plant establishment work).

Contractor bids 600 working days for Phase II work (except plant establishment work). The contractor completely finishes all the work in Phase I on day 800. The contractor has been notified that the New Carquinez Bridge (contract 04-013014) is ready to accept traffic on day 805. The contractor has 1405 (805 plus 600) working days to completely finish Phase II work (except plant establishment work).

Contractor bids 600 working days for Phase II work (except plant establishment work). The contractor completely finishes all the work in Phase I on day 830. The contractor has been notified that the New Carquinez Bridge (contract 04-013014) is ready to accept traffic on day 800. The contractor has 1400 (800 plus 600) working days to completely finish Phase II work (except plant establishment work).

SECTION 3. AWARD AND EXECUTION OF CONTRACT

The bidder's attention is directed to the provisions in Section 3, \"Award and Execution of Contract,\" of the Standard Specifications and these special provisions for the requirements and conditions concerning award and execution of contract.

The award of contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed and who has met the goal for DVBE participation or has demonstrated, to the satisfaction of the Department, adequate good faith efforts to do so. Meeting the goal for DVBE participation or demonstrating, to the satisfaction of the Department, adequate good faith efforts to do so is a condition for being eligible for award of contract.

It is anticipated that this contract will be awarded within 10 days after the bid opening.

The contract shall be signed by the successful bidder and shall be received with contract bonds by the Department within 4 days, including Saturdays, Sundays and legal holidays, after the bidder has received notice that the contract has been awarded. Failure to do so shall be just cause for forfeiture of the proposal guaranty. The executed contract documents shall be delivered to the following address: Department of Transportation, P.O. Box 942874, Sacramento, CA 94274-0001, Attn: Office Engineer (MS 43)- Contracts.

Within 2 days, not including Saturdays, Sundays and legal holidays, of return of the executed contract and bonds, the Department will notify the successful bidder of either approval of the contract by the Attorney General or the attorney appointed and authorized to represent the Department of Transportation, or disapproval of the submittal. Should the Department fail to provide notification within said 2 days, the delay will be considered a right of way delay as specified in Section 8-1.09, \"Right of Way Delays,\" of the Standard Specifications.

The bidder shall bid the number of working days for it to complete the work in Phase II (except plant establishment work) of this contract. Bids in which the number of working days bid for completion of all the work in Phase II exceed 610 days will be considered non-responsive and will be rejected.

All bids will be compared on the basis of the Engineer's Estimate of the quantities of work to be done (TOTAL BID (A)), plus the product of the number of working days bid for completion of all the work in Phase II and the cost per day shown on the Engineer's Estimate (TOTAL BID (B)).

The apparent lowest bid will be determined on the basis of the "Total Basis for Comparison of Bids (A + B)" set forth in the Engineer's Estimate. The contract price for the awarded contract will be the "TOTAL BID (A)" set forth in the proposal.

Each of the two bonds specified in Section 3-1.02, "Contract Bonds," of the Standard Specifications shall be the sum equal to 100 percent of the "Total Bid (A)" set forth on the proposal form.

A "Payee Data Record" form will be included in the contract documents to be executed by the successful bidder. The purpose of the form is to facilitate the collection of taxpayer identification data. The form shall be completed and returned to the Department by the successful bidder with the executed contract and contract bonds. For the purposes of the form, vendor shall be deemed to mean the successful bidder. The form is not to be completed for subcontractors or suppliers. Failure to complete and return the "Payee Data Record" form to the Department as provided herein will result in the retention of 20 percent of payments due the contractor and penalties of up to $20,000. This retention of payments for failure to complete the "Payee Data Record" form is in addition to any other retention of payments due the Contractor.

It is expected that within 2 days, not including Saturdays, Sundays and legal holidays, of return of the executed contract and bonds, the Department will notify the successful bidder of either approval of the contract by the Attorney General or the attorney appointed and authorized to represent the Department of Transportation, or disapproval of the submittal.

Attention is also directed to "Small Business Preference" of these special provisions. Any bidder who is certified as a Small Business by the Department of General Services, Office of Small Business Certification and Resources will be allowed a preference in the award of this contract, if it be awarded, under the following conditions:

A. The apparent low bidder is not certified as a Small Business, or has not filled out and signed the Request for Small Business Preference included with the bid documents and attached a copy of their Office of Small Business Certification and Resources (OSBCR) small business certification letter to the form; and

B. The bidder filled out and signed the Request for Small Business Preference form included with the bid documents and attached a copy of their Office of Small Business Certification and Resources (OSBCR) small business certification letter to the form.

The small business preference will be a reduction in the bid submitted by the small business contractor, for bid comparison purposes, by an amount equal to 5 percent of the amount bid by the apparent low bidder, the amount not to exceed $50,000. If this reduction results in the small business contractor becoming the low bidder, then the contract will be awarded to the small business contractor on the basis of the actual bid of the small business contractor notwithstanding the reduced bid price used for bid comparison purposes.

Attention is also directed to "California Company Preference" of these special provisions.

The amount of the California company reciprocal preference shall be equal to the amount of the preference applied by the state of the nonresident contractor with the lowest responsive bid, except where the "California company" is eligible for a California Small Business Preference, in which case the preference applied shall be the greater of the two, but not both.

If the bidder submitting the lowest responsive bid is not a "California company" and with the benefit of the reciprocal preference, a "California company's" responsive bid is equal to or less than the original lowest responsive bid, the "California company" will be awarded the contract at its submitted bid price except as provided below.

Small business bidders shall have precedence over nonsmall business bidders in that the application of the "California company" preference for which nonsmall business bidders may be eligible shall not result in the denial of the award to a small business bidder.

SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

Attention is directed to the provisions in Section 8-1.03, "Beginning of Work," in Section 8-1.06, "Time of Completion," and in Section 8-1.07, "Liquidated Damages," of the Standard Specifications and these special provisions.

The 72 hours advance notice before beginning work as referred to in Section 8-1.03, "Beginning of Work," is changed to 24 hours advance notice for this project.

A working day as defined in Section 8-1.06, "Time of Completion," is re-defined for this project with the following exceptions:

Subparagraph (a) shall not apply. Saturdays, Sundays and legal holidays, including days of inclement weather that do not exceed the days described below, shall be counted as working days.

Subparagraph (b) is re-defined to the following: A rainy season is defined as the twelve month period ,beginning after the contract has been approved by the Attorney General or the attorney appointed and authorized to represent the Department of Transportation. For each rainy season of the contract, **forty-five** days (**45**) of inclement weather are expected. The Contractor is expected to anticipate the loss of **forty-five** days of work to inclement weather in his bid for each rainy season as defined above. The **forty-five** days of inclement weather per rainy season shall be reduced for any partial rainy season on the contract as follows:

Partial Year Inclement
Weather Days = ((**forty-five** days/12) x (months remaining in raining season))

The contract will be extended an additional working day for each inclement weather day in excess of the days described above. The Contractor will not be charged for a working day for days on which the Contractor is prevented by inclement weather or conditions resulting immediately therefrom adverse to the current controlling operation or operations, as determined by the Engineer for proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations in excess of the days described above.

The work shall be completed in two phases. Phase I consists of completing work as shown on the contract plan SC-4 (Stage Construction, Stage 3 Phase 1) and such other work, including the bridge barriers, the railing on the westerly barrier, all signs, lighting and electrical systems, traffic operations and call box systems that will allow the New Crockett Viaduct to be completely open to traffic with a minimum of four lanes with final pavement delineation. Phase II consists of all remaining work.

Phase I work shall be diligently prosecuted to completion before the expiration **800** working days beginning at 12:01 a.m. on the day after the day of contract award.

The Contractor shall pay to the State of California the sum of **$57,000** per day, for each and every calendar day's delay in finishing the work in Phase I excess of 800 working days.

Delays due to actions required by the Engineer performing normal inspection, testing and review duties shall be considered as included in the number of working days bid for completion of the contract and no extensions of time will be allowed for such actions in determining liquidated damages.

The maximum number of days specified for the completion of the Phase I work contemplated herein is considered insufficient to permit completion of the work by the Contractor working a normal number of hours per day or week on a single shift basis. Should the Contractor fail to maintain the progress of the work in accordance with the "Progress Schedule" required in these special provisions, additional shifts will be required to the extent deemed necessary, be added to ensure that the progress conforms to the above mentioned schedule and that the work will be completed within the number of working days bid.

Phase II work (except plant establishment work) shall be diligently prosecuted to completion before the expiration of the number of working days bid beginning at 12:01a.m. on the day after the expiration of 800 working days or upon notification of the contractor by the engineer that the New Carquinez Bridge (contract 04-013014) is ready to accept traffic, whichever is later. Non-conflicting Phase II work may be performed concurrently with Phase I work and until such a time (after the expiration of 800 working days) that the contractor is informed that the New Carquinez Bridge is ready to accept traffic.

The Contractor shall pay to the State of California the sum of **$35,000** per day, for each and every calendar day's delay in finishing Phase II work (except plant establishment work) in excess of the total number of working days bid.

Full compensation for any additional costs occasioned by compliance with the provisions in this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

No incentive payments will be paid nor will disincentive deductions be charged on this project.

The 72 hours advance notice before beginning work as referred to in said Section 8-1.03 is changed to 24 hours advance notice for this project.

The time limit specified for the completion of the work contemplated herein is considered insufficient to permit completion of the work by the Contractor working a normal number of hours per day or week on a single shift basis. Should the Contractor fail to maintain the progress of the work in conformance with the \"Progress Schedule\" required in these special provisions, additional shifts will be required to the extent necessary to ensure that the progress conforms to the abovementioned schedule and that the work will be completed within the time limit specified.

Full compensation for any additional costs occasioned by compliance with the provisions in this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.19 OVERHEAD

The Contractor will be compensated for overhead in accordance with these special provisions.

Attention is directed to "Force Account Payment" and "Progress Schedule (Critical Path)" of these special provisions.

Section 9-1.08, "Adjustment of Overhead Costs," of the Standard Specifications shall not apply.

Time related overhead shall consist of those overhead costs, including field and home office overhead, that are in proportion to the time required to complete the work. Time related overhead costs shall not include costs that are not related to time, including but not limited to mobilization, licenses, permits, and any other charges incurred only once during duration of the contract.

The contract lump sum price paid for time related overhead shall include full compensation for time related overhead incurred by the Contractor and by any joint venture partner, subcontractor, supplier or other party associated with the Contractor.

The contract lump sum price bid for time related overhead will be adjusted only as a result of suspensions and adjustments of time which revise the current contract completion date and which are also any of the following:

A. suspensions of work ordered in accordance with Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications, except:

    1. suspensions ordered due to the failure on the part of the Contractor to carry out orders given, or to perform any provision of the contract; and
    2. suspensions ordered due to unsuitable weather conditions;

B. extensions of time granted by the State in accordance with the provisions of the fifth paragraph of Section 8-1.07, "Liquidated Damages," of the Standard Specifications; or

C. reductions in contract time set forth in approved contract change orders, in accordance with Section 4-1.03, "Changes," of the Standard Specifications.

For each day the number of calendar days to complete the contract (days bid to complete Phase II (except plant establishment work) plus 800 days), in conformance with the provisions in Section 4, "Beginning of Work, Time of Completion and Liquidated Damages," of these special provisions, is adjusted due to suspensions or adjustments as specified above, the lump sum price for time related overhead will be adjusted by an amount equal to the contract lump sum price bid for time related overhead divided by the number of calendar days to complete the contract. The provisions in Sections 4-1.03B, "Increased or Decreased Quantities" and 4-1.03C, "Changes in Character of the Work," of the Standard Specifications, shall not apply to time related overhead.

For the purpose of making partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications, time related overhead to be paid in each monthly estimate will be based on the number of working days that occurred during that monthly estimate period. The amount earned per day for time related overhead shall be the lesser of the following amounts:

A. the contract lump sum price for time related overhead, divided by the number of calendar days to complete the contract (days bid to complete Phase II (except plant establishment work) plus 800 days), in conformance with the provisions in Section 4, "Beginning Of Work, Time Of Completion And Liquidated Damages," of these special provisions; or

B. fifteen percent of the original contract amount, divided by the number of calendar days to complete the contract (days bid to complete Phase II (except plant establishment work) plus 800 days), in conformance with the provisions in Section 4, "Beginning Of Work, Time Of Completion And Liquidated Damages," of these special provisions.

After acceptance of the contract pursuant to Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, the amount, if any, of the contract lump sum price for time related overhead not yet paid will be included for payment in the first estimate made after acceptance of the contract in accordance with Section 9-1.07, "Payment after Acceptance," of the Standard Specifications.

Full compensation for all overhead costs, including overhead costs for increases in the quantity of contract items of work; other than time related overhead paid for as specified above, and other than overhead costs included in the markups specified in "Force Account Payment" of these special provisions; shall be considered as included in the various items of work and no additional compensation will be allowed therefor.

10-1.21 OBSTRUCTIONS

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 150 mm in diameter or pipelines operating at pressures greater than 415 kPa (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	1-800-642-2444 1-800-227-2600
Underground Service Alert-Southern California (USA)	1-800-422-4133 1-800-227-2600

It is anticipated that the following utility facilities will be relocated prior to the dates shown:

Utility	Location	Date
PG &E -76 mm Gas Line	Vista Del Rio	12/22/00
PG &E - 51 mm Gas Line	Virginia Street	12/22/00
Crockett Volenteer FD	Pomona Street, Wanda Street	1/31/01
Pac Bell OH Telephone Line	Pomona Street	1/31/01
PG &E - Underground Elect Line	Pomona Street	1/31/01
PG &E - Underground Elect Line	Vista Del Rio	1/31/01
Pacific Bell - Fiber Optic Cable	Wanda Street	11/27/00
Pacific Bell - Underground Tele Line	Vista Del Rio	11/27/00
EBMUD - 635 mm water Line	Dowrelio Drive	1/31/01
EBMUD - 203 mm water Line	WB Off-Ramp Termini at Pomona St.	11/27/00
Crockett-Valona San Dist- 152 mm VCP	Virginia Street	1/31/01
Crockett-Valona San Dist- 203 mm VCP	Kendall Avenue	1/31/01
Crockett-Valona San Dist- 203 mm VCP	Vista Del Rio	1/31/01
Crockett-Valona San Dist- 152 mm VCP	Ceres Street	1/31/01
Crockett-Valona San Dist- 203 mm VCP	Wanda Street & Loop	11/27/00
Crockett-Valona San Dist- 152 mm VCP	Ceres Street & Wanda Street	1/31/01
Crockett-Valona San Dist- 203 mm VCP	Ceres Street & Wanda Street	1/31/01
AT&T - OH Cable TV Line	Wanda Street & Vista Del Rio	2/28/01
Contra Costa Co - Siren Pole	Wanda Street & Pomona Street	1/31/01
PG&E OH Elect. Line	Pomona Street, Vista Del Rio, Kendall Street, Wanda Street	3/28/01

Installation or relocation of the following utility facilities will require coordination with the Contractor's operations. The Contractor shall make the necessary arrangements with the utility company, through the Engineer, and shall submit a schedule of work, verified by a representative of the utility company, to the Engineer. The schedule of work shall provide not less than the following number of working days, as defined in Section 8-1.06, "Time of Completion," of the Standard Specifications for the utility company to complete their work:

Utility (address)	Location	Working Days
PG&E - OH Elect Line	Pomona St, Vista Del Rio, Kendall Ave, Wanda St & Dowrelio Dr	120
Pacific Bell - Fiber Optic Cable	Existing WB Off-Ramp	180
EBMUD - 406 mm Water Line	Vista Del Rio	90
EBMUD - 406 mm Water Line	Vista Del Rio, Kendall Ave & Virginia St	90

In the event that the utility facilities mentioned above are not removed or relocated by the date specified and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being removed or relocated by the date specified, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

CAST-IN-DRILLED-HOLE CONCRETE PILES

Cast-in-drilled-hole concrete piling shall conform to the provisions in Section 49-4, "Cast-In-Place Concrete Piles," of the Standard Specifications and these special provisions.

Within a support location, no pile shall be constructed immediately adjacent to recently constructed piles until the adjacent piles have cured for a minimum of 48 hours.

The first and second paragraphs of Section 49-4.01, "Description," of the Standard Specifications are amended to read:

- Cast-in-place concrete piles shall consist of one of the following:

A. Steel shells driven permanently to the required bearing value and penetration and filled with concrete.
B. Steel casings installed permanently to the required penetration and filled with concrete.
C. Drilled holes filled with concrete.
D. Rock sockets filled with concrete.

- The drilling of holes shall conform to the provisions in these specifications. Concrete filling for cast-in-place concrete piles is designated by compressive strength and shall have a minimum 28-day compressive strength of 25 MPa. At the option of the Contractor, the combined aggregate grading for the concrete shall be either the 25-mm maximum grading, the 12.5-mm maximum grading, or the 9.5-mm maximum grading. Concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," and Section 51, "Concrete Structures." Reinforcement shall conform to the provisions in Section 52, "Reinforcement."

The fourth paragraph of Section 49-4.03, "Drilled Holes," of the Standard Specifications is amended to read:

- After placing reinforcement and prior to placing concrete in the drilled hole, if caving occurs or deteriorated foundation material accumulates on the bottom of the hole, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

The provisions of "Welding Quality Control" of these special provisions shall not apply to temporary steel casings.

Cast-in-drilled-hole concrete piles 600 mm in diameter or larger may be constructed by excavation and depositing concrete under slurry.

Materials

Concrete deposited under slurry shall have a nominal penetration equal to or greater than 90 mm. Concrete shall be proportioned to prevent excessive bleed water and segregation.

Concrete deposited under slurry shall contain not less than 400 kg of cement per cubic meter.

For cast-in-drilled-hole concrete piling, the following gradation is added to the table in the third paragraph in Section 90-3.01, "General," of the Standard Specifications:

Primary Aggregate Nominal Size	Sieve Sizes	Limits of Proposed Gradation
12.5 mm x 4.75 mm	9.5 mm	40 - 78
9.5 mm x 2.36 mm	9.5 mm	50 - 85

At the Contractor's option, the Contractor may use either the 12.5-mm maximum combined aggregate grading or the 9.5-mm maximum combined aggregate grading. For cast-in-drilled-hole concrete piling, the following table is added to the first paragraph in Section 90-3.02, "Coarse Aggregate Grading," of the Standard Specifications:

	Percentage Passing Primary Aggregate Nominal Sizes			
	12.5 mm x 4.75 mm		9.5 mm x 2.36 mm	
Sieve Sizes	Operating Range	Contract Compliance	Operating Range	Contract Compliance
19 mm	100	100		
12.5 mm	82 - 100	80 - 100	100	
9.5 mm	X ± 15	X ± 22	X ± 15	X ± 20
4.75 mm	0 - 15	0 - 18	0 - 25	0 - 28
2.36 mm	0 - 6	0 - 7	0 - 6	0 - 7

For cast-in-drilled-hole concrete piling, the following grading limits of combined aggregates for the 12.5-mm x 4.75-mm primary aggregate nominal size or for the 9.5-mm x 2.36-mm primary aggregate nominal are added to the table in Section 90-3.04, "Combined Aggregate Gradings," of the Standard Specifications:

Grading Limits of Combined Aggregate		
	Percentage Passing	
Sieve Sizes	12.5-mm Max.	9.5-mm Max.
19 mm	100	100
12.5 mm	90 - 100	100
9.5 mm	55 - 86	50 - 100
4.75 mm	45 - 63	45 - 63
2.36 mm	35 - 49	35 - 49
1.18 mm	25 - 37	25 - 37
600 µm	15 - 25	15 - 25
300 µm	5 - 15	5 - 15
150 µm	1 - 8	1 - 8
75 µm	0 - 4	0 - 4

SLURRY

Slurry shall be commercial quality synthetic drilling slurry and shall conform to the requirements of these special provisions. Mineral slurry shall not be used.

Slurry shall be premixed prior to placement in the cast-in-drilled-hole concrete piling.

Water used for mixing slurry shall conform to the provisions in Section 90-2.03, "Water," of the Standard Specifications and these special provisions. Water mixed with salt shall be used for mixing slurry. Salt content shall be 6 percent minimum. Seawater mixed with salt so that salt content is 6 percent minimum may be used for mixing slurry when approved by the Engineer. Slurry mixing sequence shall conform to the requirements of these special provisions, and the recommendations of the slurry manufacturer.

Slurry shall not weaken the bond between the concrete and both the reinforcement and the foundation material at the sides of the excavation.

The Contractor shall sample and test all slurry in the presence of the Engineer, unless otherwise directed. The date, time, names of the persons sampling and testing the slurry, and results of the tests shall be recorded by the Contractor and shall be approved by the Engineer before concrete is placed. A copy of slurry test results shall be delivered to the Engineer at the completion of each pile.

Synthetic

Synthetic slurries shall be used and mixed in conformance with the manufacturer's recommendations and these special provisions. The following synthetic slurries may be used:

PRODUCT	MANUFACTURER
SlurryPro CDP	KB Technologies Ltd. Suite 216 735 Broad Street Chattanooga, TN 37402 (800) 525-5237
Super Mud	PDS Company c/o Champion Equipment Company 8140 East Rosecrans Ave. Paramount, CA 90723 (800) 782-3222
Shore Pac GCV	CETCO Drilling Products Group 1350 West Shure Drive Arlington Heights, IL 60004 (847) 392-5800

Inclusion of a synthetic slurry on the above list may be obtained by meeting the Department's requirements for synthetic slurries. The requirements can be obtained from the Office of Structure Design, P.O. Box 942874, Sacramento, CA 94274-0001.

Synthetic slurries listed may not be appropriate for a given site.

A manufacturer's representative, as approved by the Engineer, shall provide technical assistance for the use of their product, shall be at the site prior to introduction of the synthetic slurry into a drilled hole, and shall remain at the site until released by the Engineer.

SlurryPro CDP synthetic slurries shall be mixed in conformance with the following sequence:

1. Bring water to the required range of pH by using the SlurryPro product, ProTek.
2. Mix the water with SlurryPro CDP synthetic slurry.
3. Add the SlurryPro product, MPA. MPA shall be diluted to a 10 percent solution prior to adding to the water and slurry mixture.
4. Add salt to obtain the required salt content. Salt may be mixed with the water prior to adding ProTek and MPA.
5. Adjust pH by using ProTek.

Super Mud synthetic slurries shall be mixed in conformance with the following sequence:

1. Bring fresh, unsalted water or seawater to the required range of pH by using soda ash (Na_2CO_3) or the product Water Treat.
2. Mix the water with Super Mud concentrate to form a viscous slurry. Use 10 grams of Super Mud for 250 to 500 grams of fresh, unsalted water, or as recommended by the manufacturer.
3. Add salt to obtain the required salt content.
4. Adjust pH.
5 Fresh, unsalted water may be mixed with Super Mud to form a concentrated mixture prior to adding pH-conditioned salt water, including seawater, with minimum salt content to the mixture, provided slurry with required viscosity can be attained.

Synthetic slurries shall be sampled and tested at both mid-height and near the bottom of the drilled hole. Samples shall be taken and tested during drilling as necessary to verify the control of the properties of the slurry. Samples shall be taken and tested when drilling is complete, but prior to final cleaning of the bottom of the hole. When samples are in conformance with the requirements shown in the following tables for each slurry product, the bottom of the hole shall be cleaned and any loose or settled material removed. Samples shall be obtained and tested after final cleaning with steel reinforcement in place and just prior to placing concrete.

SlurryPro CDP synthetic slurries shall be tested for conformance to the requirements shown in the following table:

SLURRYPRO CDP KB Technologies Ltd.		
PROPERTY	REQUIREMENT	TEST
Density (kg/m^3) - during drilling - prior to final cleaning - just prior to placing concrete	 less than or equal to 1075* less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling -prior to final cleaning - just prior to placing concrete	 38 to 127 less than or equal to 74	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	10 to 11.5	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - prior to final cleaning - just prior to placing concrete	 less than or equal to 0.5	Sand API 13B-1 Section 5
*Salt content shall be a minimum of 6 percent by weight, and the allowable densities shall be increased by a minimum of 65 kg/m^3. Slurry temperature shall be at least 4 degrees Celsius when tested.		

Super Mud synthetic slurries shall be tested for conformance to the requirements shown in the following table:

SUPER MUD PDS Company		
PROPERTY	REQUIREMENT	TEST
Density (kg/m^3) - prior to final cleaning - just prior to placing concrete	less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling - prior to final cleaning - just prior to placing concrete	34 to 64 less than or equal to 64	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	8 to 10.0	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - prior to final cleaning -just prior to placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
*Salt content shall be a minimum of 6 percent by weight, and the allowable densities shall be increased by a minimum of 65 kg/m^3. Slurry temperature shall be at least 4 degrees Celsius when tested.		

Shore Pac GCV synthetic slurries shall be tested for conformance to the requirements shown in the following table:

Shore Pac GCV CETCO Drilling Products Group		
PROPERTY	REQUIREMENT	TEST
Density (kg/m^3) - prior to final cleaning - just prior to placing concrete	less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling - prior to final cleaning - just prior to placing concrete	35 to 78 less than or equal to 60	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	8.0 to 11.0	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - prior to final cleaning -just prior to placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
*Salt content shall be a minimum of 6 percent by weight, and the allowable densities shall be increased by a minimum of 65 kg/m^3. Slurry temperature shall be at least 4 degrees Celsius when tested.		

The viscosity of slurry shall be maintained during drilling, and during final cleaning. To maintain viscosity of slurry using SlurryPro, MPA and SlurryPro synthetic slurry shall be added to the slurry in the cast-in-drilled-hole concrete pile. To maintain viscosity of slurry using Super Mud, Super Mud synthetic slurry shall be added to the slurry in the cast-in-drilled-hole concrete pile. Any fresh slurry to be added to the slurry in the cast-in-drilled-hole concrete pile shall have a salt content of 6 percent minimum.

Slurry viscosity and salt content shall be regularly monitored and as determined necessary by the Engineer. Dissolved salt probes may be used. The accuracy of said probes shall be tested to ensure that slurry mixed with drill cuttings will not give erroneous results.

Construction

The Contractor shall submit a placing plan to the Engineer for approval prior to producing the test batch for cast-in-drilled-hole concrete piling and at least 10 working days prior to constructing piling. The plan shall include complete description, details, and supporting calculations as listed below:

A. Requirements for all cast-in-drilled hole concrete piling:

1. Concrete mix design, certified test data, and trial batch reports.
2. Drilling methods and equipment.
3. Proposed method for casing installation and removal when necessary.

4. Plan view drawing of pile showing reinforcement and inspection pipes, if required.
5. Methods for placing, positioning, and supporting bar reinforcement.
6. Methods and equipment for accurately determining the depth of concrete and actual and theoretical volume placed, including effects on volume of concrete when any casings are withdrawn.
7. Methods and equipment for verifying that the bottom of the drilled hole is clean prior to placing concrete.

B. Additional requirements when concrete is placed under slurry:

1. Concrete batching, delivery, and placing systems including time schedules and capacities therefor. Time schedules shall include the time required for each concrete placing operation at each pile.
2. Concrete placing rate calculations. When requested by the Engineer, calculations shall be based on the initial pump pressures or static head on the concrete and losses throughout the placing system, including anticipated head of slurry and concrete to be displaced.
3. Suppliers test reports on the physical and chemical properties of the slurry and any proposed slurry chemical additives including Material Safety Data Sheet.
4. Slurry testing equipment and procedures.
5. Removal and disposal of excavation, slurry, and contaminated concrete, including methods and rates of removal.
6. Slurry agitating, recirculating, and cleaning methods and equipment.

In addition to compressive strength requirements, the consistency of the concrete to be deposited under slurry shall be verified before use by producing a batch to be tested. The test batch shall be produced and delivered to the project under conditions and in time periods similar to those expected during the placement of concrete in the piles. Concrete for the test batch shall be placed in an excavated hole or suitable container of adequate size to allow testing in conformance with California Test 533. Depositing of test batch concrete under slurry will not be required. The test batch shall demonstrate that the proposed concrete mix design achieves both the specified nominal penetration and a penetration of at least 50 mm after twice the time required for each concrete placing operation at each pile, as submitted in the placing plan, has elapsed. The time period shall begin at the start of placement. The concrete shall not be vibrated or agitated during the test period. Upon completion of testing, the concrete shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Concrete deposited under slurry shall not be vibrated until all temporary casing is removed and concrete contaminated with soil, slurry, or other materials is removed. Concrete deposited under slurry shall be vibrated in the upper 2 m of the pile.

The concrete deposited under slurry shall be carefully placed in a compact, monolithic mass and by a method that will prevent washing of the concrete. Placing concrete shall be a continuous operation lasting not more than the time required for each concrete placing operation at each pile, as submitted in the placing plan, unless otherwise approved in writing by the Engineer. The concrete shall be placed with concrete pumps and delivery tube system of adequate number and size to complete the placing of concrete in the time specified. The delivery tube system shall consist of one of the following:

A. A tremie tube or tubes, each of which are at least 250 mm in diameter, fed by one or more concrete pumps.
B. One or more concrete pump tubes, each fed by a single concrete pump.

The delivery tube system shall consist of watertight tubes with sufficient rigidity to keep the ends always in the mass of concrete placed. If only one delivery tube is utilized to place the concrete, the tube shall be placed near the center of the drilled hole. Multiple tubes shall be uniformly spaced in the hole. Internal bracing for the steel reinforcing cage shall accommodate the delivery tube system. Tremies shall not be used for piles without space for a 250-mm tube.

Spillage of concrete into the slurry during concrete placing operations shall not be allowed. Delivery tubes shall be capped with a water tight cap, or plugged above the slurry level with a good quality, tight fitting, moving plug that will expel the slurry from the tube as the tube is charged with concrete. The cap or plug shall be designed to be released as the tube is charged. The pump discharge or tremie tube shall extend to the bottom of the hole before charging the tube with concrete. After charging the delivery tube system with concrete, the flow of concrete through a tube shall be induced by slightly raising the discharge end. During concrete placement, the tip of the delivery tube shall be maintained to prevent reentry of the slurry into the tube. Until at least 3 m of concrete has been placed, the tip of the delivery tube shall be within 150 mm of the bottom of the drilled hole, and then the embedment of the tip shall be maintained at least 3 m below the top surface of the concrete. Rapid raising or lowering of the delivery tube shall not be permitted. If the seal is lost or the delivery tube becomes plugged and must be removed, the tube shall be withdrawn, the tube cleaned, the tip of the tube capped to prevent entrance of the slurry, and the operation restarted by pushing the capped tube 3 m into the concrete and then reinitiating the flow of concrete.

When slurry is used, the slurry level shall be maintained within 300 mm of the top of the drilled hole.

When slurry is used, a fully operational standby concrete pump, adequate to complete the work in the time specified, shall be provided at the site during concrete placement.

A log of the placing of the concrete in each drilled hole shall be maintained by the Contractor when concrete is deposited under slurry. The log shall show the pile location, tip elevation, dates of excavation and concrete placement, total quantity of concrete deposited, length and tip elevation of any casing, and details of any hole stabilization method and materials used. The log shall include a 215 mm x 280 mm sized graph of the concrete placed versus depth of hole filled. The graph shall be plotted continuously throughout placing of concrete. The depth of drilled hole filled shall be plotted vertically with the pile tip oriented at the bottom and the quantity of concrete shall be plotted horizontally. Readings shall be made at least at each 1.5 m of pile depth, and the time of the reading shall be indicated. The graph shall be labeled with the pile location, tip elevation, cutoff elevation, and the dates of excavation and concrete placement. The log shall be delivered to the Engineer within one working day of completion of placing concrete in the pile.

After placing reinforcement and prior to placing concrete in the drilled hole, if drill cuttings settle out of slurry, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

If temporary casing is used, concrete placed under slurry shall be maintained at a level at least 1.5 m above the bottom of the casing. The withdrawal of casings shall not cause contamination of the concrete with slurry.

Material resulting from using slurry shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Attention is directed to "Contaminated and Hazardous Materials" elsewhere in these special provisions.

Acceptance Testing and Mitigation

Vertical inspection pipes for acceptance testing shall be provided in all cast-in-drilled-hole concrete piles that are 600 mm in diameter or larger, except when the holes are dry or when the holes are dewatered without the use of temporary casing to control the groundwater.

Inspection pipes shall be Schedule 40 polyvinyl chloride pipe with a nominal inside diameter of 50 mm. Each inspection pipe shall be capped top and bottom and shall have watertight couplers to provide a clean, dry and unobstructed 50-mm diameter clear opening from 1.0 m above the pile cutoff down to the bottom of the reinforcing cage.

If the Contractor drills the hole below the specified tip elevation, the reinforcement and the inspection pipes shall be extended to 75 mm clear of the bottom of the drilled hole.

Inspection pipes shall be placed around the pile, inside the outermost spiral or hoop reinforcement, and 75 mm clear of the vertical reinforcement, at a uniform spacing not exceeding 840 mm measured along the circle passing through the centers of inspection pipes. A minimum of 2 inspection pipes per pile shall be used. When the vertical reinforcement is not bundled and each bar is not more than 26 mm in diameter, inspection pipes may be placed 50 mm clear of the vertical reinforcement. The inspection pipes shall be placed to provide the maximum diameter circle that passes through the centers of the inspection pipes while maintaining the clear spacing required herein. The pipes shall be installed in straight alignment, parallel to the main reinforcement, and securely fastened in place to prevent misalignment during installation of the reinforcement and placing of concrete in the hole.

The Contractor shall log the location of the inspection pipe couplers with respect to the plane of pile cut off, and these logs shall be delivered to the Engineer upon completion of the placement of concrete in the drilled hole.

After placing concrete and before requesting acceptance tests, each inspection pipe shall be tested by the Contractor in the presence of the Engineer by passing a 48.3-mm diameter rigid cylinder 610 mm long through the complete length of pipe. If the 48.3-mm diameter rigid cylinder fails to pass any of the inspection pipes, the Contractor shall attempt to pass a 32.0-mm diameter rigid cylinder 1.375 m long through the complete length of those pipes in the presence of the Engineer. If an inspection pipe fails to pass the 32.0-mm diameter cylinder, the Contractor shall immediately fill all inspection pipes in the pile with water.

The Contractor shall replace each inspection pipe that does not pass the 32.0-mm diameter cylinder with a 50.8-mm diameter hole cored through the concrete for the entire length of the pile. Cored holes shall be located as close as possible to the inspection pipes they are replacing, no more than 150 mm inside the reinforcement, and coring shall not damage the pile reinforcement. Cored holes shall be made with a double wall core barrel system utilizing a split tube type inner barrel. Coring with a solid type inner barrel will not be allowed. Coring methods and equipment shall provide intact cores for the entire length of the pile concrete. The coring operation shall be logged by an Engineering Geologist or Civil Engineer licensed in the State of California and experienced in core logging. Coring logs shall include complete descriptions of inclusions and voids encountered during coring, and shall be delivered to the Engineer upon completion. Concrete cores shall be preserved, identified with the exact location the core was recovered from within the pile, and made available for inspection by the Engineer.

Acceptance tests of the concrete will be made by the Engineer, without cost to the Contractor. Acceptance tests will evaluate the homogeneity of the placed concrete. Tests will include gamma-gamma logging. Tests may also include crosshole sonic logging and other means of inspection selected by the Engineer. The Contractor shall not conduct operations within 8.0 m of the gamma-gamma logging operations. The Contractor shall separate reinforcing steel as necessary to allow the Engineer access to the inspection pipes to perform gamma-gamma logging or other acceptance testing. After requesting acceptance tests and providing access to the piling, the Contractor shall allow 15 working days for the Engineer to conduct these tests if the 48.3-mm diameter cylinder passed all inspection pipes, and 20 working days if only the 32.0-mm diameter cylinder passed all inspection pipes. Should the Engineer fail to complete these tests within the time allowance, and if in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in inspection, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

All inspection pipes and cored holes in a pile shall be dewatered and filled with grout after notification by the Engineer that the pile is acceptable. Placement and removal of water in the inspection pipes shall be at the Contractors expense. Grout shall conform to the provisions in Section 50-1.09, "Bonding and Grouting," of the Standard Specifications. The inspection pipes and holes shall be filled using grout tubes that extend to the bottom of the pipe or hole or into the grout already placed.

If acceptance testing performed by the Engineer determines that a pile does not meet the requirements of the specifications, then that pile will be rejected and all depositing of concrete under slurry or concrete placed using temporary casing for the purpose of controlling groundwater shall be suspended until written changes to the methods of pile construction are approved in writing by the Engineer.

The Contractor shall submit to the Engineer for approval a mitigation plan for repair, supplementation, or replacement for each rejected cast-in-drilled-hole concrete pile, and this plan shall conform to the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. Prior to submitting this mitigation plan, the Engineer will hold a repair feasibility meeting with the Contractor to discuss the feasibility of repairing rejected piling. The Engineer will consider the size of the defect, the location of the defect, and the design information and corrosion protection considerations for the pile. This information will be made available to the Contractor, if appropriate, for the development of the mitigation plan. If the Engineer determines that it is not feasible to repair the rejected pile, the Contractor shall not include repair as a means of mitigation and shall proceed with the submittal of a mitigation plan for replacement or supplementation of the rejected pile.

If the Engineer determines that a pile does not require mitigation due to structural, geotechnical, or corrosion concerns, the Contractor may elect to not repair anomalies found during acceptance testing of that pile. For the unrepaired pile, no payment will be made for the length of pile affected by the anomaly, as determined by the Engineer.

Pile mitigation plans shall include the following:

A. The designation and location of the pile addressed by the mitigation plan.
B. A review of the structural, geotechnical, and corrosion design requirements of the rejected pile.
C. A step by step description of the mitigation work to be performed, including drawings if necessary.
D. An assessment of how the proposed mitigation work will address the structural, geotechnical, and corrosion design requirements of the rejected pile.
E. Methods for preservation or restoration of existing earthen materials.
F. A list of affected facilities, if any, with methods and equipment for protection of these facilities during mitigation.
G. The State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Kilometer Post , and the Contractor's (and Subcontractor's if applicable) name on each sheet.
H. A list of materials, with quantity estimates, and personnel, with qualifications, to be used to perform the mitigation work.
I. The seal and signature of an engineer who is licensed as a Civil Engineer by the State of California.

For rejected piles to be repaired, the Contractor shall submit a pile mitigation plan that contains the following additional information:

A. An assessment of the nature and size of the anomalies in the rejected pile.
B. Provisions for access for additional pile testing if required by the Engineer.

For rejected piles to be replaced or supplemented, the Contractor shall submit a pile mitigation plan that contains the following additional information:

A. The proposed location and size of additional piling.
B. Structural details and calculations for any modification to the structure to accommodate the replacement or supplemental piling.

All provisions for cast-in-drilled-hole concrete piling shall apply to replacement piling.

The Contractor shall allow the Engineer 21 working days to review the mitigation plan after a complete submittal has been received.

Should the Engineer fail to review the complete pile mitigation submittal within the time specified, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the pile mitigation plan, an extension of time commensurate with the delay in completion of the work thus caused will be granted in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

When repairs are performed, the Contractor shall submit a mitigation report to the Engineer within 10 days of completion of the repair. This report shall state exactly what repair work was performed and quantify the success of the repairs relative to the submitted mitigation plan. The mitigation report shall be stamped and signed by an engineer that is licensed as a Civil Engineer by the State of California. The mitigation report shall show the State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Kilometer Post, and the Contractor (and Subcontractor if applicable) name on each sheet. The Engineer will be the sole judge as to whether a mitigation proposal is acceptable, the mitigation efforts are successful, and to whether additional repairs, removal and replacement, or construction of a supplemental foundation is required.

TEMPORARY HINGE TIEDOWNS

Temporary hinge tiedowns, complete with anchorages, shall be installed and tensioned as shown on the plans within 10 days after completion of longitudinal post-tensioning and before releasing bridge falsework in the hinge span and adjoining span.

Working drawings and calculations for temporary hinge tiedowns shall be submitted in conformance with the provisions for working drawings for prestressing systems in Section 50-1.02, "Drawings," of the Standard Specifications. The working drawings and calculations shall be signed by a civil engineer registered in the State of California. Working drawings shall include details of the procedures and methods for the gradual tensioning and detensioning of the hinge tiedowns. The Contractor shall allow 3 weeks after complete drawings and all support data are submitted for the review of working drawings.

Hinge tiedowns and anchorages shall be made from materials that do not yield during an extended period of time under sustained loading. The hinge tiedowns shall provide for checking and simple adjustment of the force during their service life using commonly available equipment and tools. The hinge tiedowns shall provide for easy and gradual detensioning, simple removal and a minimal amount of repair to the bridge surfaces after removal. The tiedowns shall be cased for a height of 3 m above the ground surface with plastic pipe or steel pipe held in place with vandal resistant retaining devices. Anchorages shall be covered and protected from vandalism.

Metal exposed to the atmosphere shall be protected from corrosion at least equivalent to the protection afforded by cleaning and priming with inorganic zinc primer.

The hinge tiedowns shall not impair the structural integrity of the bridge or its foundation. The design of hinge tiedown anchorages shall include any strengthening of bridge components and foundation material necessary to support the hinge tiedown anchorages, including providing for the moments and loads induced into the substructure and foundations. Additional concrete, reinforcement and other materials necessary to accommodate the hinge tiedowns shall be provided. Such additions shall conform to the provisions for similar work in these special provisions and the Standard Specifications. Rearrangement of reinforcing steel, prestressing steel and other bridge materials necessary to accommodate the hinge tiedowns shall be shown on the working drawings.

Hinge tiedowns shall not be attached to the bridge columns unless otherwise shown on the plans.

Stressing of high-tensile wire, strand or bars shall conform to the provisions in Section 50-1.08, "Prestressing," of the Standard Specifications.

Hinge tiedowns shall be tensioned after prestressing the concrete and before releasing the falsework in the supporting hinge span and adjoining span. The tension force shall be as shown on the plans.

Unless otherwise shown on the plans, the tension force for the entire hinge shall be distributed to a minimum of 2 tiedowns with an approximately equal amount in each tiedown and shall be placed symmetrically about the centerline of the structure. No more than one-half of the tension force at a tiedown shall be applied before an equal force is applied at the adjacent tiedowns. At no time during the tensioning operations shall more than one-sixth of the tension force for the entire hinge be applied eccentrically about the centerline of the structure.

The hinge tiedowns shall remain fully tensioned while constructing the supported span in the adjoining frame.

All the concrete at the hinge, except concrete above the bridge deck, shall be in place for a period of at least 10 days before detensioning tiedowns that are to be removed on this project. The hinge tiedowns that are to be removed shall be gradually detensioned and removed before releasing superstructure falsework in the supported span.

Detensioning of each tiedown shall be in increments such that not more than one-half of the total tension force at the tiedown is released before releasing an equal force at the adjacent tiedowns. At no time during detensioning operations shall more than one-sixth of the tension force for the entire hinge be applied eccentrically about the centerline of the structure. Wires, strands, or bars shall be detensioned before cutting or removing them or their anchorages.

Blockouts and recesses remaining in the structure after removal of the tiedowns shall be filled with concrete and finished to match the surrounding surfaces. Embedded fasteners and metal parts shall be removed in conformance with the provisions for form bolts in Section 51-1.18A, "Ordinary Surface Finish," of the Standard Specifications. Buried portions of tiedowns and anchorages shall be removed to a depth of one meter below finished grade except that the limits for removal shall be as specified for embedded fasteners and metal parts when the tiedowns or anchorages are attached to bridge footings or other buried structures shown on the plans.

Full compensation for temporary hinge tiedowns, including furnishing, installing, maintaining and removing the tiedowns, and including additional concrete, reinforcement, earthwork, and any materials to be left in place shall be considered as included in the contract price paid per cubic meter for structural concrete, bridge and no separate payment will be made therefor.

DRILL AND BOND DOWEL (EPOXY CARTRIDGE)

Drilling and bonding dowels with epoxy cartridges shall conform to the details shown on the plans and these special provisions.

Reinforcing steel dowels shall conform to the provisions in "Reinforcement" of these special provisions.

The Contractor shall select an epoxy cartridge system which has passed the testing requirements of the International Conference of Building Officials (ICBO) document - AC58 and additional test requirements as specified in the Caltrans Augmentation/Revisions to ICBO AC58. Testing shall be performed by an independent testing facility and the results will be reviewed and approved by the Transportation Laboratory. The Caltrans Augmentation/Revisions to ICBO AC58 document may be obtained by contacting the Transportation Laboratory, telephone: (916) 227-7000.

The epoxy cartridge system used shall be appropriate for the ambient concrete temperature and installation conditions at the time of installation in conformance with the manufacturer's specifications.

Epoxy cartridges shall be accompanied by a Certificate of Compliance as provided in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The certificate shall state that the material complies in all respects to the requirements of ICBO AC58 and Caltrans Augmentation/Revisions to ICBO AC58.

Each epoxy cartridge shall be clearly and permanently marked with the manufacturer's name, model number of the epoxy cartridge system, manufacturing date, and lot number. Each carton of epoxy cartridges shall contain the manufacturer's recommended installation procedures, minimum cure time, and such warning or precautions concerning the contents as may be required by State or Federal Laws and Regulations.

The holes shall be drilled by methods that will not shatter or damage the concrete adjacent to the holes. If reinforcement is encountered during drilling, before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves, in writing, coring through the reinforcement, the hole will be rejected and a new hole, in which reinforcement is not encountered, shall be drilled adjacent to the rejected hole to the depth recommended by the manufacturer.

The drilled holes shall be cleaned in conformance with the manufacturer's instructions and shall be dry at the time of placing the epoxy cartridge bonding material and the steel dowels. The bonding material shall be a 2-component epoxy system contained in a cartridge having 2 separate chambers and shall be inserted into the hole using a dispensing gun and replaceable mixing nozzle approved by the manufacturer. Unless otherwise specified, the depth of hole and the installation procedure shall be as recommended by the manufacturer. A copy of the manufacturer's recommended installation procedure shall be provided to the Engineer at least 2 days prior to the start of work.

Immediately after inserting the dowels into the epoxy, the dowels shall be supported as necessary to prevent movement during curing and shall remain undisturbed until the epoxy has cured a minimum time as specified by the manufacturer. Dowels that are improperly bonded, as determined by the Engineer, will be rejected. Adjacent new holes shall be drilled, and new dowels shall be placed and securely bonded to the concrete. All work necessary to correct improperly bonded dowels shall be performed at the Contractor's expense.

Full compensation for drilling holes, including coring through reinforcement when approved by the Engineer, and bonding dowels with epoxy cartridges shall be considered as included in the contract price paid per kilogram for isolation casing and no additional compensation will be allowed therefor.

MEASUREMENT AND PAYMENT

Measurement and payment for concrete in structures shall conform to the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

Concrete for concrete pedestal for pedestrian railing on bridges will be paid for as structural concrete, bridge.

Concrete for concrete collar around cast-in-steel-shell concrete piles will be paid for as structural concrete, bridge footing.

Full compensation for roughening concrete surfaces to a full amplitude of approximately 6 mm, where shown on the plans, shall be considered as included in the contract price paid per cubic meter for structural concrete, bridge and no separate payment will be made therefor.

Full compensation for furnishing and installing access opening covers in soffits of new cast-in-place box girder bridges shall be considered as included in the contract price paid per cubic meter for structural concrete, bridge and no separate payment will be made therefor.

Full compensation for furnishing and constructing permanent steel deck forms shall be considered as included in the contract price paid per cubic meter for structural concrete, bridge and no additional compensation will be allowed therefor.

Full compensation for anchor bolts and concrete anchorages at sidewalk and for polyurethane joint seal including cleaning the joint at Bridge No. 23-0015R shall be considered as included in the contract price paid per cubic meter for lightweight concrete (bridge) and no additional compensation will be allowed therefor.

10-1.64 ARCHITECTURAL SURFACE (TEXTURED CONCRETE)

Architectural texture for concrete surfaces shall conform to the details shown on the plans and the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Architectural textures listed below are required at concrete surfaces shown on the plans:

A. Fractured rib texture
B. Recessed panel

The fractured rib texture shall be an architectural texture simulating the appearance of straight ribs of concrete with a fractured concrete texture imparted to the raised surface between the ribs. Grooves between ribs shall be continuous with no apparent curves or discontinuities. Variation of the groove from straightness shall not exceed 6 mm for each 3 m of groove. The architectural texture shall have random shadow patterns. Broken concrete at adjoining ribs and groups of ribs shall have a random pattern. The architectural texture shall not have secondary patterns imparted by shadows or repetitive fractured surfaces.

TEST PANEL

A test panel at least 1.25 m x 1.25 m in size shall be successfully completed at a location approved by the Engineer before beginning work on architectural textures. The test panel shall be constructed and finished with the materials, tools, equipment and methods to be used in constructing the architectural texture. If ordered by the Engineer, additional test panels shall be constructed and finished until the specified finish, texture and color are obtained, as determined by the Engineer.

The test panel approved by the Engineer shall be used as the standard of comparison in determining acceptability of architectural texture for concrete surfaces.

FORM LINERS

Form liners shall be used for textured concrete surfaces and shall be installed in conformance with the manufacturer's recommendations, unless other methods of forming textured concrete surfaces are approved by the Engineer. Form liners shall be manufactured from an elastomeric material or a semi-elastomeric polyurethane material by a manufacturer of commercially available concrete form liners. No substitution of other types of formliner material will be allowed. Form liners shall leave crisp, sharp definition of the architectural surface. Recurring textural configurations exhibited by repeating, recognizable shadow patterns shall be prevented by proper casting of form liner patterns. Textured concrete surfaces with such recurring textural configurations shall be reworked to remove such patterns as approved by the Engineer or the concrete shall be replaced.

Form liners shall have the following properties:

Description	ASTM Designation:	Range
Elastomeric material		
Shore A hardness	D 2240	20 to 65
Tensile strength (MPa)	D 412	0.9 to 6.2
Semi-elastomeric polyurethane		
Shore D hardness	D 2240	55 to 65
Tensile strength (MPa)	D 2370	18 minimum

Cuts and tears in form liners shall be sealed and repaired in conformance with the manufacturer's recommendations. Form liners that are delaminated from the form shall not be used. Form liners with deformations to the manufactured surface caused by improper storage practices or any other reason shall not be used.

Form liners shall extend the full length of texturing with transverse joints at 2.5 m minimum spacing. Small pieces of form liners shall not be used. Grooves shall be aligned straight and true. Grooves shall match at joints between form liners. Joints in the direction of grooves in grooved patterns shall be located only in the depressed portion of the textured concrete. Adjoining liners shall be butted together without distortion, open cracks or offsets at the joints. Joints between liners shall be cleaned before each use to remove any mortar in the joint.

Adhesives shall be compatible with the form liner material and with concrete. Adhesives shall be approved by the liner manufacturer. Adhesives shall not cause swelling of the liner material.

RELEASING FORM LINERS

Products and application procedures for form release agents shall be approved by the form liner manufacturer. Release agents shall not cause swelling of the liner material or delamination from the forms. Release agents shall not stain the concrete or react with the liner material. For reliefs simulating fractured concrete or wood grain surfaces the application method shall include the scrubbing method using a natural bristle scrub brush in the direction of grooves or grain The release agent shall coat the liner with a thin film. Following application of form release agent, the liner surfaces shall be cleaned of excess amounts of agent using compressed air. Buildup of form release agent caused by the reuse of a liner shall be removed at least every 5 uses.

Form liners shall release without leaving particles or pieces of liner material on the concrete and without pulling or breaking concrete from the textured surface. The concrete surfaces exposed by removing forms shall be protected from damage.

CURING

Concrete surfaces with architectural texture shall be cured only by the forms-in-place or water methods. Seals and curing compounds shall not be used.

MEASUREMENT AND PAYMENT

Fractured rib texture will be measured and paid for by the square meter.

The contract price paid per square meter for fractured rib texture shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in architectural texture, complete in place, including test panels, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for recessed panel architectural texture, including test panels, shall be considered as included in the contract price paid per meter for concrete barrier type 27 (modified) and concrete barrier type 27B (modified) and no separate payment will be made therefor.

10-1.75 ISOLATION CASINGS

Isolation casings shall consist of galvanized, corrugated structural steel plate pipe with steel angles as shown on the plans and conforming to the provisions in Section 55, "Steel Structures," of the Standard Specifications and these special provisions.

Concrete and drilling and bonding dowels, epoxy cartridge shall conform to the provisions in "Concrete Structures" of these special provisions.

Structural steel for isolation casings shall conform to the requirements in ASTM Designation: A 36/A 36M, or at the Contractor's option, ASTM Designation: A 709/A 709M, Grade 36.

New metal surfaces shall be galvanized.

MEASUREMENT AND PAYMENT

Isolation casings will be measured and paid for in conformance with the provisions in Section 55-4.01, "Measurement," of the Standard Specifications and these special provisions.

The contract price paid per kilogram for isolation casing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in isolation casings, complete in place, including concrete cap, concrete collar, reinforcement, steel angles, drill and bond dowels, epoxy cartridge and resin capsules, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.108 SURVEY OF EXISTING NON-HIGHWAY FACILITIES

This work shall consist of performing a photo survey, elevation survey, and crack monitoring of existing facilities, buildings, sub-sidewalk basements, and other improvements, which might be damaged by the operations of the Contractor. The Contractor shall perform the elevation survey and the photo survey prior to and after performing any bridge removal, demolition, pile activity, shoring installation, or other significant impact work that has a potential to cause damage to existing facilities, and as directed by the Engineer. The photo and elevation survey and crack monitoring shall be conducted in conformance with the requirements of these Special Provisions.

The photo survey shall consist of photographic and video recording of the conditions of the facilities specified herein, prior to and after performing significant impact work adjacent to said facilities. The condition of the foundation, walls, ceiling, roof, improvements, and other building elements on the interiors and exteriors of the said facilities shall be documented. The scope of the photo survey shall include both internal and external cracks in structures, settlement, leakage, distress, and any other conditions as directed by the Engineer.

The photo survey, elevation survey, and crack monitoring shall be conducted at those facilities shown in the table below, or as directed by the Engineer. The pre-construction photo survey shall be performed at least 10 days prior to beginning any bridge removal, demolition, pile activity, shoring installation, or other significant impact work that has a potential to cause damage to existing facilities within 61 meters of the listed facilities. A post-construction photo survey shall be performed on the same facilities within 5 days after the completion of the work.

PHOTO AND ELEVATION SURVEY AND CRACK MONITORING
Address
1863 Johnson Ave.
1849 Johnson Ave.
1837 Columbus St.
1910 Dowrelio Dr.
1911 Dowrelio Dr.
1855 Dowrelio Dr.
1859 Pomona St.
1853 Pomona St.
1845 Pomona St.
1823 Pomona St.
1811 Pomona St.
1799 Pomona St.
1761 Pomona St.
1739 Pomona St.
240 Virginia St.
235 Virginia St.
225 Virginia St.

The Contractor shall submit to the Engineer for approval a complete description of the work to be completed for each of the surveyed locations and existing faci1ities. The work to be completed shall consist of records of observations, videotapes, and photographs. The Contractor shall notify the Engineer 48 hours prior to beginning the photo and elevation survey and crack monitoring work.

The photograph prints shall be on glossy photographic color paper and have a printed image size of at least 127 mm x 178 mm (5"x7"). Proof sheet, thumbnail prints, or contact prints are not acceptable. All negatives shall be provided in protective sleeves and indexed to facilitate expeditious reproduction. All photos shall be identified by date, location, orientation, and labeled with a detailed description. They shall be submitted in a 3-ring binder that includes protective photo sleeves, building layout of each floor as necessary, and a summary sheet indexing all photos.

The digital color camera shall have a minimum resolution of 1280 x 960 pixels or defined as "megapixel". Digital photo prints shall be on either dye sublimation printer capable of color fusion and continuos tone, a color laser printer capable of printing 1200x1200 dots per inch (dpi), or a professional graphics color inkjet printer capable of printing 1440x720 dpi and using six separate color reservoirs. All digital prints shall utilize photo quality glossy heavy weight paper as defined by the printer manufacturer and approved by the Engineer. They shall be printed at the highest print mode or print quality available to the approved printer (photo mode or best print quality). The digital prints shall also include the path name (folder and subfolder names) and file name of the picture location on the photo CD-ROM.

All digital photos on CD-ROM shall be saved in the JPEG file format. The image quality option of the JPEG file shall be set to high. The JPEG files should be stored in separate folders based on photo location. The CD-ROM shall be submitted to the Engineer as part of the photo survey submittal. With every photo survey submittal the contractor shall include a letter of authenticity certifying that every digital photo image in the photo survey submittal has not been modified using photographic software.

The Contractor shall submit a list of digital photo equipment proposed for use, including digital cameras, photographic software, photo printers, and photo quality glossy heavy weight paper. The submittal shall include actual recent samples of digital photos taken with the proposed camera and printed with the proposed printer. The photos shall be printed to the highest quality on the required photo-quality glossy heavy weight paper.

The contractor shall videotape the foundation, floors, walls, ceilings, roof improvements, and all building elements inside and outside the specified facilities as part of the photo survey. The video survey shall show the condition of the facility, including, but not limited to, any and all deficiencies in the facility such as cracks, settlement, leakage, distress, and any other conditions as directed by the Engineer. The video tape recording shall be narrated contemporaneously by the camera operator, documenting the location, orientation, time and date of the scene. The narration may be supplemented by on-screen text either generated by the camera or by other methods approved by the Engineer. The video survey shall be conducted using premium grade VHS color tape and shall be recorded in the Standard Play (SP) mode. All video tape recording shall be made to the highest quality and standards. No more than one facility shall be recorded on single videotape. The contractor shall submit the original, unedited video recording to the engineer within 3 working days of the video survey. Copies of the video shall be professionally made and shall not incur signal degradation during copying.

A written report of the record of observations shall be submitted with the videotape. This report shall include the date and time of the recording and the location of the facility in question. It shall also include a table listing the anomalies with a detailed description, and orientation. The table shall list the beginning and the ending times of the videocassette counter for each anomaly recorded on the videotape.

Crack monitoring shall be made on all existing cracks in each of the facilities included in this survey and shall be performed concurrent with the photo survey. The gage installation shall be done concurrent with the pre-construction photo survey. Crack monitoring shall be performed using a calibrated crack-monitoring device approved by the Engineer. The crack gage shall be capable of measuring cracks to the nearest millimeter. The location of the crack gauges shall be identified in the pre-construction survey report.

Cracks shall be monitored weekly during the pre-construction photo survey and daily throughout the duration of any work that has a potential to cause damage to the existing facilities. The crack gauge measurements shall be recorded at the same time each day in an effort to eliminate deviations in crack magnitude due to heat fluctuations. A report detailing such readings shall be provided to the Engineer on a weekly basis.

The elevation survey shall be conducted to obtain vertical elevations of existing buildings, foundations, and other improvements. A minimum of three points shall be monitored at each facility. Elevation measuring equipment shall be of a type approved by the Engineer. Such equipment shall be capable of measuring changes in elevations to the nearest 0.127 mm. The elevation survey shall be performed by a Professional Land Surveyor registered in the State of California or by a competent person designated by such a professional surveyor.

Three calendar days prior to beginning any impact work, the Contractor shall document the elevations of the required points per facility and shall continue to document each point on a daily basis until the significant impact work begins. During the impact work, the Contractor shall document the elevations of the points three times per shift. After the impact work is complete for the specified location, the Contractor shall document the elevations on a daily basis for two days. If there is variation in elevation of 3.175 mm or more, the impact work shall be halted, and the Engineer shall be immediately notified. If the work is halted due to fluctuations in elevation the Contractor shall modify their operations to eliminate future fluctuations in elevations, at no cost to the State.

Within 10 working days after the completion of any impact work, the Contractor shall submit to the Engineer a report documenting the results of the survey. Each facility shall have a separate report. The report shall be signed by a Professional Land Surveyor in the State of California who performed the survey or in whose authority the survey was made. The report shall include the location of the monitoring points, the address of the facility surveyed, and the building layout. A general layout plan shall be included in the report showing the elevations, dimensions, and distances of the monitoring locations.

The photographs, videotapes, and reports of all observations shall be prepared in triplicate by the Contractor and the authorized representatives of the State and of the Contractor shall sign every document.

The pre-construction survey records and the documentation specified above shall be submitted to the Engineer prior to commencement of any significant impact work as defined above. The Engineer shall have five working days to review the submittal. No work shall take place unless the Engineer approves the pre-construction survey records. The package of the post-construction survey documents shall be submitted within 10 working days, after the impact work has been completed adjacent to each of the specified facilities.

The photo survey package may be submitted in portions based on Stage Construction, if in the opinion of the Engineer deleterious actions can be avoided in the subsequent stages. The submittal package shall include all records, documents photos, videotapes, and observations. The Engineer shall have five working days to review the submittal.

The Contractor shall prepare records in triplicate of all observations. The authorized representatives of the State and of the Contractor shall sign every document. Videotapes and photographs, as deemed advisable by the Engineer will be made by the Contractor and signed in the manner specified above. The Engineer will keep one signed copy of every document and photograph on file.

The above referenced records, videotapes, and photographs are intended for use as indisputable evidence in ascertaining the extent of any damage which may occur as a result of the Contractor's operations. The above-referenced records, videotapes, and photographs are for the protection of the adjacent property owners, the Contractor, and the State. These records will be used to determine any damage from the Contractor's operations during the work.

Attention is directed to Section 7-1.12: "Responsibility for Damage" of the Standard Specifications. The Contractor will immediately inform the Engineer in writing of any damage to these and other facilities.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various contract items of work and no additional compensation will be allowed therefor.

The Engineer may order photo surveys, elevation surveys, and crack monitoring of existing facilities other than those facilities listed under "Photo and Elevation Survey and Crack Monitoring". It will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

SECTION 10-6 MECHANICAL

10-6.01 AIR AND WATER LINES--Air and water lines identified on the plans shall be of the size shown and shall conform to the details shown on the plans, and these special provisions.

Working drawings..--The Contractor shall submit complete working drawings.

The working drawings shall be supplemented by manufacturer's descriptive data, performance data and installation instructions for the following: Working drawings shall be submitted as described elsewhere in these specifications.

Pipe
Valves
Air outlets
Hose and Fittings
Couplings

For initial review, 5 sets of drawings shall be submitted. After review, 6 sets shall be submitted to the said Office for final approval and use during construction.

MATERIALS:--

Pipe and fittings for supply lines less than 100 mm diameter.--Pipe and fittings for supply lines less than 100mm diameter shall conform to the provisions of Section 20-2.15A, "Steel Pipe," of the Standard Specifications except that grooved couplings shall be used rather than threaded.

Fabricated steel supports and fasteners.--Fabricated steel supports and welds shall be in conformance with the details shown on the plans, the provisions in Section 75, "Miscellaneous Metal" of the Standard Specifications, and these special provisions. Bolts and nuts shall be in accordance with Section 55, "Steel Structures," of the Standard Specifications.

Mechanical couplings.--Mechanical pipe couplings shall be self-centering and shall engage and lock in place the grooved pipe and pipe fittings in a positive, airtight couple. Fittings shall provide some degree of angular pipe deflection, contraction, and expansion.

Coupling housing clamps shall be fabricated in 2 or more parts of malleable iron castings conforming to the specifications in ASTM Designation: A47, Grade 32510. Housing clamps shall hold in place a molded synthetic rubber composition air sealing gasket designed so that internal pressure serves to increase the seal’s air tightness. Couplings shall be coated with a rust inhibiting vinyl alkyd enamel coating.

The coupling assembly shall be securely held together by 2 or more trackhead, square or ovalneck, steel bolts. Bolts and nuts shall be heat treated carbon steel and shall be in accordance with the specifications in ASTM Designation: A 183 Couplings shall be UL listed for fire protection systems and rated for a working pressure of 6890 kPa

Mechanical pipe taps.--Mecahnical pipe taps shall consist of a ductile or cast iron body, coated to prevent corrosion and on attachment body which has a flat surface against the pipe. The body shall include a gasket around the tapped opening to provide a 100 percent leak proof seal. The mechanical tap shall be rated for use on steel pipe and shall have a 3445 kPa pressure rating.

Air outlets.--Air outlets shall be Chicago pneumatic No. C-151120Y, Dixon valve and coupling AB-12, or equal.

Hose faucet.--Hose faucet shall be compression type, angle pattern, tee handle, 19 mm with hose end and rough brass finish.

Expansion hose.--Expansion hose shall be sized as shown on the plans. Hose shall be rated for 1375 kPa working pressure. Minimum bend radius shall be 600 mm. Hose shall be constructed with a smooth rubber liner, multiply carcass with galvanized spring wire reinforcement and an abrasion resistant cover. Hose shall be covered with a 28 gage galvanized steel sheathing.

Hose coupling and fittings shall match the hose and piping and be made of brass, bronze or stainless steel.

Gate valve (63 mm and smaller).--Gate valve shall be bronze body and trim, removable bonnet and non rising stem, class 125 and same size as pipe in which installed. Gate valve shall be Crane, 438; Nibco Scott, T-113; Jenkins, 370; or equal.

Gate valve in nonferrous water piping systems may be solder joint type with bronze body and trim. Valve shall be Kitz, 59, Nibco Scott, S-113; Jenkins, 1240; or equal.

Gate valve (76 mm and larger).--Gate valve shall be iron body with bronze trim, removable bonnet and non rising stem, class 125 and same size as pipe in which installed. Gate valve shall be Crane, 461; Nibco Scott, F-619; Jenkins, 326; or equal.

Ball valve.--Ball valve shall be two piece, minimum 400-pounds WOG, bronze body and chrome plated or brass ball with full size port. Valve shall be Nibco Scott, T-580-Y; Watts, B-6000; Kitz, 56; or equal.

INSTALLATION:--

Pipe fittings.--Pipe fittings shall be as follows: for pipe less than 38 mm, threaded screw connections; for piping 38 mm or more, mechanical couplings or flanges as shown on the plans. For mechanical couplings the pipe ends receiving the cut groove mechanical coupling shall be supplied grooved in accordance with the coupling manufacture. For grooving on-site, pipe shall be prepared in accordance with the coupling manufacturer's specifications using specially designed tools available.

Cut groove pipe ends shall be clean and free from indentations, projections and roll marks in the area from pipe end to groove for proper gasket sealing.

Before couplings are assembled, pipe ends and outsides of gaskets shall be lightly coated with cup grease, graphite paste, or other lubricant recommended by the pipe coupling manufacturer to facilitate installation.

The entire coupling installation shall be done in accordance with the manufacturer's latest published literature.

Painted surfaces damaged as a result of the Contractor's operations shall be repaired by wire brushing the damaged member to remove all dirt and loose paint and then applying 2 coats of zinc-rich primer. Damaged epoxy coating shall be repaired using an epoxy coating compatible with the original fusion bonded coating, following the manufacturer's recommendations.

A manufacturer's representative shall visit the job site to observe the first installation of mechanical couplings and to train the Contractor's workers so that all mechanical couplings are installed by workmen trained by the manufacturer's representative and that the couplings are installed in accordance with the manufacturer's recommended installation practices.

No more than two mechanical couplings shall be installed between supports. At least one coupling shall be installed between supports.

Elbows, tees, and reducers shall be forged or cast and installed with the same type coupling as the surrounding pipe.

Bridge pipe fittings.--Bridge pipe shall be supported within the guidelines shown on the plans. Piping shall be supported to allow for weight loading, thermal and bridge expansion, and lateral loading equal to bridge movement.

Cutting pipe.--All pipe shall be cut straight and true and the ends shall be reamed to the full inside diameter of the pipe after cutting.

All pipe shall be cut by a power hacksaw, a circular cutting machine using an abrasive wheel, or in a squire-end saw vise by means of a hand saw. The pipe shall be reamed after cutting and rough edges or burrs removed so that a smooth and unobstructed flow will be obtained.

Damaged piping.--Pipe that is cracked or otherwise damaged shall be removed from the work.

Pipe joints and connections.--Joints in the threaded steel pipe shall be made with a pipe joint compound that is nonhardening and noncorrosive, placed on the pipe and not in the fittings.

The use of thread cement or caulking of threaded joints will not be permitted. Threaded joints shall be made tight. Long screw or other packed joints will not be permitted. Any leaky joints shall be remade with new material.

Cleaning and closing of pipe.--The interior of all pipe shall be cleaned before installation. All openings shall be capped or plugged as soon as the pipelines are installed to prevent the entrance of any materials. The caps or plugs shall remain in place until their removal is necessary for completion of the installation. All completed systems shall be flushed or blown out.

TESTING.--

Air and Water supply lines shall be tested in accordance with the provisions in Section 20-5.03H(1), "Method A," of the Standard Specifications, except that the testing period shall be 4 hours minimum with no leakage or pressure drop.

The Contractor shall furnish pipe anchorages to resist thrust forces occurring during testing. All leaks shall be repaired and all defective materials shall be replaced by the Contractor at his expense.

The air and water lines shall be tested as a unit. All water shall be removed from the air line at the completion of testing air and water lines.

MEASUREMENT AND PAYMENT.--

Measurement and payment for air and water lines for each size listed in the Engineers Estimate shall be made in the same manner as galvanized steel pipe and plastic pipe supply lines in Sections 20-5.04, "Measurement," and 20-5.05, "Payment," of the Standard Specifications.

Full compensation for furnishing and installing outlets, steel hangers, steel brackets, and other fittings, testing and checking, and hose assemblies shall be considered as included in the contract prices paid per linear foot for the sizes of air and water lines involved and no additional compensation will be allowed therefor.

10-6.02 MODIFY WATER LINES-- Water lines identified on the plans shall be of the size shown and shall conform to the details shown on the plans, and these special provisions.

Working drawings..--The Contractor shall submit complete working drawings.

The working drawings shall be supplemented by manufacturer's descriptive data, performance data and installation instructions for the following: Working drawings shall be submitted as described elsewhere in these specifications.

Pipe
Concrete anchors
Couplings

For initial review, 5 sets of drawings shall be submitted. After review, 6 sets shall be submitted to the said Office for final approval and use during construction.

MATERIALS:--

Pipe and fittings for supply lines.--Pipe and fittings for supply lines shall conform to the provisions of Section 20-2.15A, "Steel Pipe," of the Standard Specifications except that the pipe shall be prepared for grooved couplings rather than threaded.

Fabricated steel supports and fasteners.--Fabricated steel supports and welds shall be in conformance with the details shown on the plans, the provisions in Section 75, “Miscellaneous Metal” of the Standard Specifications, and these special provisions. Bolts and nuts shall be in accordance with Section 55, “Steel Structures,” of the Standard Specifications. Anchors shall be resin capsule type.

Mechanical couplings.--Mechanical pipe couplings shall be self-centering and shall engage and lock in place the grooved pipe and pipe fittings in a positive, airtight couple. Fittings shall provide some degree of angular pipe deflection, contraction, and expansion.

Coupling housing clamps shall be fabricated in 2 or more parts of malleable iron castings conforming to the specifications in ASTM Designation: A47, Grade 32510. Housing clamps shall hold in place a molded synthetic rubber composition air sealing gasket designed so that internal pressure serves to increase the seal’s air tightness. Couplings shall be coated with a rust inhibiting vinyl alkyd enamel coating.

The coupling assembly shall be securely held together by 2 or more trackhead, square or ovalneck, steel bolts. Bolts and nuts shall be heat treated carbon steel and shall be in accordance with the specifications in ASTM Designation: A 183 Couplings shall be UL listed for fire protection systems and rated for a working pressure of 6890 kPa

INSTALLATION:--

Pipe fittings.--Pipe fittings shall be mechanical couplings. For mechanical couplings the pipe ends receiving the cut groove mechanical coupling shall be supplied grooved in accordance with the coupling manufacture. For grooving on-site, pipe shall be prepared in accordance with the coupling manufacturer’s specifications using specially designed tools available.

Cut groove pipe ends shall be clean and free from indentations, projections and roll marks in the area from pipe end to groove for proper gasket sealing.

Before couplings are assembled, pipe ends and outsides of gaskets shall be lightly coated with cup grease, graphite paste, or other lubricant recommended by the pipe coupling manufacturer to facilitate installation.

The entire coupling installation shall be done in accordance with the manufacturer’s latest published literature.

Painted surfaces damaged as a result of the Contractor’s operations shall be repaired by wire brushing the damaged member to remove all dirt and loose paint and then applying 2 coats of zinc-rich primer. Damaged epoxy coating shall be repaired using an epoxy coating compatible with the original fusion bonded coating, following the manufacturer’s recommendations.

A manufacturer’s representative shall visit the job site to observe the first installation of mechanical couplings and to train the Contractor’s workers so that all mechanical couplings are installed by workmen trained by the manufacturer’s representative and that the couplings are installed in accordance with the manufacturer’s recommended installation practices.

Elbows, tees, and reducers shall be forged or cast and installed with the same type coupling as the surrounding pipe.

Bridge pipe fittings.--Bridge pipe shall be supported within the guidelines shown on the plans. Piping shall be supported to allow for weight loading, thermal and bridge expansion, and lateral loading equal to bridge movement.

Cutting pipe.--All pipe shall be cut straight and true and the ends shall be reamed to the full inside diameter of the pipe after cutting.

All pipe shall be cut by a power hacksaw, a circular cutting machine using an abrasive wheel, or in a squire-end saw vise by means of a hand saw. The pipe shall be reamed after cutting and rough edges or burrs removed so that a smooth and unobstructed flow will be obtained.

Damaged piping.--Pipe that is cracked or otherwise damaged shall be removed from the work.

Cleaning and closing of pipe.--The interior of all pipe shall be cleaned before installation. All openings shall be capped or plugged as soon as the pipelines are installed to prevent the entrance of any materials. The caps or plugs shall remain in place until their removal is necessary for completion of the installation. All completed systems shall be flushed or blown out.

TESTING.--

Water supply lines shall be tested in accordance with the provisions in Section 20-5.03H(1), "Method A," of the Standard Specifications, except that the testing period shall be 4 hours minimum with no leakage or pressure drop.

The Contractor shall furnish pipe anchorages to resist thrust forces occurring during testing. All leaks shall be repaired and all defective materials shall be replaced by the Contractor at his expense.

The water lines shall be tested as a unit.

MEASUREMENT AND PAYMENT.--

Measurement and payment for modify water lines for each size listed in the Engineers Estimate shall be made in the same manner as galvanized steel pipe and plastic pipe supply lines in Sections 20-5.04, "Measurement," and 20-5.05, "Payment," of the Standard Specifications.

Full compensation for relocating outlets, steel hangers, steel brackets, and other fittings, testing and checking shall be considered as included in the contract prices paid per linear foot for the sizes of water lines involved and no additional compensation will be allowed therefor.

ENGINEER'S ESTIMATE
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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
1	BLANK					
2	019451	ELECTRONIC MOBILE DAILY DIARY COMPUTER SYSTEM DATA DELIVERY	LS	LUMP SUM	LUMP SUM	
3	070018	TIME RELATED OVERHEAD	LS	LUMP SUM	LUMP SUM	
4	070010	PROGRESS SCHEDULE (CRITICAL PATH)	LS	LUMP SUM	LUMP SUM	
5	019452	NON-STORM WATER DISCHARGE	LS	LUMP SUM	LUMP SUM	
6	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM	LUMP SUM	
7	074020	WATER POLLUTION CONTROL	LS	LUMP SUM	LUMP SUM	
8	074029	TEMPORARY SILT FENCE	M	620		
9	019453	TEMPORARY COVER	M2	1000		
10	019454	TEMPORARY DRAINAGE INLET PROTECTION	EA	73		
11	121100	TEMPORARY EROSION CONTROL	M2	26 900		
12	019455	TEMPORARY CONCRETE WASHOUT	EA	10		
13	BLANK					
14	019457	TEMPORARY ROCK BAG BARRIER	M	160		
15	019458	TEMPORARY ENTRANCE/EXIT	LS	LUMP SUM	LUMP SUM	
16 (S)	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM	LUMP SUM	
17 (S)	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
18 (S)	120120	TYPE III BARRICADE	EA	20		
19	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	35		
20	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	15 760		

REVISED PER ADDENDUM NO. 2 DATED OCTOBER 20, 2000

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
21	120165	CHANNELIZER (SURFACE MOUNTED)	EA	75		
22	120300	TEMPORARY PAVEMENT MARKER	EA	7530		
23 (S)	128650	PORTABLE CHANGEABLE MESSAGE SIGN	EA	8		
24	129000	TEMPORARY RAILING (TYPE K)	M	11 040		
25	129100	TEMPORARY CRASH CUSHION MODULE	EA	130		
26	150206	ABANDON CULVERT	EA	20		
27	150605	REMOVE FENCE	M	260		
28	150662	REMOVE METAL BEAM GUARD RAILING	M	30		
29	150667	REMOVE DOUBLE METAL BEAM BARRIER	M	490		
30	150711	REMOVE PAINTED TRAFFIC STRIPE	M	9100		
31	019459	REMOVE YELLOW PAINTED TRAFFIC STRIPE	M	3170		
32	150712	REMOVE PAINTED PAVEMENT MARKING	M2	35		
33	150714	REMOVE THERMOPLASTIC TRAFFIC STRIPE	M	1090		
34	150174	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE	M	160		
35	150715	REMOVE THERMOPLASTIC PAVEMENT MARKING	M2	9		
36	150722	REMOVE PAVEMENT MARKER	EA	9720		
37	150744	REMOVE ROADSIDE SIGN (WOOD POST)	EA	20		
38	150747	REMOVE ROADSIDE SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	20		
39	150760	REMOVE SIGN STRUCTURE	EA	3		
40	150805	REMOVE CULVERT	M	115		

ENGINEER'S ESTIMATE
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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
41	150820	REMOVE INLET	EA	22		
42	150829	REMOVE RETAINING WALL	M3	200		
43	150846	REMOVE CONCRETE PAVEMENT	M3	3170		
44	150857	REMOVE ASPHALT CONCRETE SURFACING	M3	1120		
45	150860	REMOVE BASE AND SURFACING	M3	6440		
46	150870	REMOVE CONCRETE DECK SURFACE	M2	44		
47	151264	SALVAGE FENCE	M	215		
48	151272	SALVAGE METAL BEAM GUARD RAILING	M	80		
49	151281	SALVAGE ROADSIDE SIGN	EA	7		
50	152390	RELOCATE ROADSIDE SIGN	EA	9		
51	152394	RELOCATE SIGN STRUCTURE	EA	2		
52	152423	ADJUST MONUMENT TO GRADE	EA	1		
53	152440	ADJUST MANHOLE TO GRADE	EA	1		
54	152443	ADJUST PIPE INLET TO GRADE	EA	4		
55	152609	MODIFY INLET TO MANHOLE	EA	1		
56 (S)	019460	PLANE ASPHALT CONCRETE PAVEMENT (45MM MAX)	M2	6200		
57 (S)	019461	PLANE ASPHALT CONCRETE PAVEMENT (75MM MAX)	M2	10 300		
58	153210	REMOVE CONCRETE	M3	570		
59	153229	REMOVE CONCRETE BARRIER (TYPE K)	M	700		
60	155003	CAP INLET	EA	5		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	157551	BRIDGE REMOVAL, LOCATION A	LS	LUMP SUM	LUMP SUM	
62	157552	BRIDGE REMOVAL, LOCATION B	LS	LUMP SUM	LUMP SUM	
63	157553	BRIDGE REMOVAL, LOCATION C	LS	LUMP SUM	LUMP SUM	
64	157564	BRIDGE REMOVAL (PORTION), LOCATION D	LS	LUMP SUM	LUMP SUM	
65	157565	BRIDGE REMOVAL (PORTION), LOCATION E	LS	LUMP SUM	LUMP SUM	
66	158100	SALVAGE CRASH CUSHION	EA	2		
67	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
68	190101	ROADWAY EXCAVATION	M3	137 500		
69	190112	ROADWAY EXCAVATION (TYPE A)	M3	9240		
70	190185	SHOULDER BACKING	STA	2		
71 (F)	192003	STRUCTURE EXCAVATION (BRIDGE)	M3	712		
72 (F)	192020	STRUCTURE EXCAVATION (TYPE D)	M3	8748		
73 (F)	192021	STRUCTURE EXCAVATION (TYPE DH)	M3	586		
74 (F)	192023	STRUCTURE EXCAVATION (TYPE H)	M3	203		
75 (F)	192049	STRUCTURE EXCAVATION (SOLDIER PILE WALL)	M3	2125		
76	192502	SAND BEDDING	M3	76		
77 (F)	193003	STRUCTURE BACKFILL (BRIDGE)	M3	6058		
78 (F)	193029	STRUCTURE BACKFILL (SOLDIER PILE WALL)	M3	690		
79	193114	SAND BACKFILL	M3	995		
80 (F)	193119	LEAN CONCRETE BACKFILL	M3	1072		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81 (F)	048329	CLASS 1 CONCRETE BACKFILL	M3	1460		
82	194001	DITCH EXCAVATION	M3	7		
83 (F)	197020	EARTH RETAINING STRUCTURE	M2	1056		
84	198007	IMPORTED MATERIAL (SHOULDER BACKING)	M3	27		
85	019462	GEOGRID	M2	19 800		
86 (S)	200001	HIGHWAY PLANTING	LS	LUMP SUM	LUMP SUM	
87	200101	IMPORTED TOPSOIL	M3	4560		
88	203001	EROSION CONTROL (BLANKET)	M2	78		
89 (S)	203003	STRAW (EROSION CONTROL)	TONN	11		
90 (S)	203024	COMPOST (EROSION CONTROL)	KG	2160		
91 (S)	203014	FIBER (EROSION CONTROL)	KG	920		
92 (S)	203021	FIBER ROLLS	M	4110		
93 (S)	203045	PURE LIVE SEED (EROSION CONTROL)	KG	270		
94 (S)	203056	COMMERCIAL FERTILIZER (EROSION CONTROL)	KG	330		
95 (S)	203061	STABILIZING EMULSION (EROSION CONTROL)	KG	580		
96 (S)	204099	PLANT ESTABLISHMENT WORK	LS	LUMP SUM	LUMP SUM	
97 (S)	208000	IRRIGATION SYSTEM	LS	LUMP SUM	LUMP SUM	
98	048330	NPS 1.5 SUPPLY LINE (BRIDGE)	M	140		
99	208039	NPS 4 SUPPLY LINE (BRIDGE)	M	140		
100	048331	MODIFY NPS 4 SUPPLY LINE (BRIDGE)	M	22		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101	208731	200 MM CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	M	41		
102	250401	CLASS 4 AGGREGATE SUBBASE	M3	9290		
103	260301	CLASS 3 AGGREGATE BASE	M3	1390		
104	280000	LEAN CONCRETE BASE	M3	4970		
105	290211	ASPHALT TREATED PERMEABLE BASE	M3	440		
106	390095	REPLACE ASPHALT CONCRETE SURFACING	M3	23		
107	390155	ASPHALT CONCRETE (TYPE A)	TONN	17 070		
108	390171	ASPHALT CONCRETE BASE (TYPE A)	TONN	1410		
109	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	M2	420		
110	394040	PLACE ASPHALT CONCRETE DIKE (TYPE A)	M	1650		
111	394048	PLACE ASPHALT CONCRETE DIKE (TYPE E)	M	360		
112	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	M	350		
113	397001	ASPHALTIC EMULSION (PAINT BINDER)	TONN	190		
114	401000	CONCRETE PAVEMENT	M3	9610		
115	048332	DRILLED HOLE (750 MM)	M	655		
116	048333	DRILLED HOLE (900 MM)	M	3108		
117	048334	DRILLED HOLE (1000 MM)	M	325		
118	490505	FURNISH STEEL PILING (HP 250 X 62)	M	312		
119 (S)	490506	DRIVE STEEL PILE (HP 250 X 62)	EA	21		
120	490570	FURNISH STEEL PILING (HP 360 X 174)	M	3613		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
121 (S)	490571	DRIVE STEEL PILE (HP 360 X 174)	EA	120		
122 (S)	490657	600 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	M	5632		
123 (S)	490658	750 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	M	1890		
124 (S)	490671	2.4 M CAST-IN-DRILLED-HOLE CONCRETE PILING	M	74		
125 (F)	048335	STEEL SOLDIER PILE (W360 X 79)	M	1000		
126 (F)	048336	STEEL SOLDIER PILE (W360 X 101)	M	4624		
127 (F)	048337	STEEL SOLDIER PILE (W410 X 114)	M	416		
128 (F)	048338	STEEL SOLDIER PILE (W410 X 149)	M	636		
129 (F)	048339	STEEL SOLDIER PILE (W460 X 97)	M	175		
130 (F)	048340	STEEL SOLDIER PILE (W460 X 128)	M	108		
131 (F)	048341	STEEL SOLDIER PILE (W530 X 219)	M	370		
132 (F)	048342	STEEL SOLDIER PILE (W690 X 265)	M	265		
133	499036	FURNISH CAST-IN-STEEL-SHELL CONCRETE PILING (762 MM)	M	5075		
134 (S)	499037	DRIVE CAST-IN-STEEL-SHELL CONCRETE PILE (762 MM)	EA	194		
135 (S)	500001	PRESTRESSING CAST-IN-PLACE CONCRETE	LS	LUMP SUM	LUMP SUM	
136 (S)	500050	TIEBACK ANCHOR	EA	454		
137 (F)	048343	STRUCTURAL CONCRETE FACING	M3	485		
138 (F)	048344	ARCHITECTURAL SURFACE TREATMENT	M2	502		
139 (F)	510051	STRUCTURAL CONCRETE, BRIDGE FOOTING	M3	3245		
140 (F)	510053	STRUCTURAL CONCRETE, BRIDGE	M3	21 109		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
141 (F)	510086	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	M3	190		
142 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	201		
143	BLANK					
144 (F)	048345	LIGHTWEIGHT CONCRETE (BRIDGE)	M3	1729		
145 (F)	511064	FRACTURED RIB TEXTURE	M2	920		
146	511106	DRILL AND BOND DOWEL	M	70		
147 (F)	513501	CONCRETE CLOSURE WALL	M2	52		
148 (S)	518050	PTFE BEARING	EA	19		
149 (S)	048346	PTFE BEARING (SPHERICAL)	EA	48		
150 (S)	519127	JOINT SEAL ASSEMBLY (MR 90 MM)	M	8		
151 (S)	519128	JOINT SEAL ASSEMBLY (MR 100 MM)	M	32		
152 (S)	519129	JOINT SEAL ASSEMBLY (MR 101 MM - 160 MM)	M	20		
153 (S)	519130	JOINT SEAL ASSEMBLY (MR 161 MM - 240 MM)	M	52		
154 (S)	519132	JOINT SEAL ASSEMBLY (MR 321 MM - 400 MM)	M	62		
155 (S-F)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	4 735 500		
156 (S)	048347	WELDED HEADED BAR REINFORCEMENT	EA	47 025		
157 (S-F)	520103	BAR REINFORCING STEEL (RETAINING WALL)	KG	87 400		
158 (S-F)	520110	BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	KG	388 000		
159 (F)	530100	SHOTCRETE	M3	152		
160 (S-F)	550102	STRUCTURAL STEEL (BRIDGE)	KG	60 080		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161 (S-F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	KG	395 200		
162 (S-F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	KG	395 200		
163 (S-F)	048348	ISOLATION CASING	KG	12 512		
164 (S-F)	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	35 435		
165 (S-F)	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	35 435		
166 (S)	561009	920 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	44		
167	562002	METAL (BARRIER MOUNTED SIGN)	KG	160		
168	562004	METAL (RAIL MOUNTED SIGN)	KG	400		
169	566011	ROADSIDE SIGN - ONE POST	EA	13		
170	566012	ROADSIDE SIGN - TWO POST	EA	13		
171	568001	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	14		
172	568007	INSTALL SIGN OVERLAY	M2	2.8		
173	568016	INSTALL SIGN PANEL ON EXISTING FRAME	M2	6		
174 (F)	575004	TIMBER LAGGING	M3	458		
175	048349	CLEAN AND PAINT SOLDIER PILE	LS	LUMP SUM	LUMP SUM	
176 (S)	590115	CLEAN AND PAINT STRUCTURAL STEEL	LS	LUMP SUM	LUMP SUM	
177 (S)	590135	SPOT BLAST CLEAN AND PAINT UNDERCOAT	M2	2543		
178 (S)	048350	WORK AREA MONITORING (LOCATION A)	LS	LUMP SUM	LUMP SUM	
179 (S)	048351	WORK AREA MONITORING (LOCATION B)	LS	LUMP SUM	LUMP SUM	
180	620901	150 MM ALTERNATIVE PIPE CULVERT	M	0.8		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
181	620904	300 MM ALTERNATIVE PIPE CULVERT	M	2		
182	620909	450 MM ALTERNATIVE PIPE CULVERT	M	480		
183	620913	600 MM ALTERNATIVE PIPE CULVERT	M	140		
184	620924	900 MM ALTERNATIVE PIPE CULVERT	M	355		
185	650069	450 MM REINFORCED CONCRETE PIPE	M	940		
186	650075	600 MM REINFORCED CONCRETE PIPE	M	390		
187	650079	900 MM REINFORCED CONCRETE PIPE	M	86		
188	650084	1200 MM REINFORCED CONCRETE PIPE	M	110		
189	664009	300 MM CORRUGATED STEEL PIPE (1.63 MM THICK)	M	34		
190	664010	300 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	17		
191	664014	450 MM CORRUGATED STEEL PIPE (1.63 MM THICK)	M	39		
192	681134	80 MM PLASTIC PIPE (EDGE DRAIN)	M	370		
193	682049	CLASS 3 PERMEABLE MATERIAL (BLANKET)	M3	7250		
194	685067	200 MM ALTERNATIVE PIPE UNDERDRAIN	M	2970		
195	019463	300 MM TRENCH DRAIN	M	1890		
196	019464	400 MM TRENCH DRAIN	M	22		
197	703542	300 MM WELDED STEEL PIPE (2.67 MM THICK)	M	3.3		
198	705336	450 MM ALTERNATIVE FLARED END SECTION	EA	1		
199	721009	ROCK SLOPE PROTECTION (FACING, METHOD B)	M3	6.3		
200	725001	SACKED CONCRETE SLOPE PROTECTION	M3	1.6		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
201	729010	ROCK SLOPE PROTECTION FABRIC	M2	21		
202	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	M3	600		
203 (F)	731517	MINOR CONCRETE (GUTTER)	M	528		
204 (S-F)	750001	MISCELLANEOUS IRON AND STEEL	KG	11 080		
205 (S-F)	750501	MISCELLANEOUS METAL (BRIDGE)	KG	54 430		
206 (S-F)	750505	BRIDGE DECK DRAINAGE SYSTEM	KG	36 160		
207 (S-F)	800386	CHAIN LINK FENCE (TYPE CL-1.2, VINYL-CLAD)	M	300		
208 (S)	800391	CHAIN LINK FENCE (TYPE CL-1.8)	M	493		
209 (S-F)	800392	CHAIN LINK FENCE (TYPE CL-1.8, VINYL-CLAD)	M	232		
210 (S)	802592	2.4 M CHAIN LINK GATE (TYPE CL-1.8)	EA	1		
211 (S)	019465	9.6 M CHAIN LINK GATE (TYPE CL-1.8)	EA	1		
212	019466	4.8 M CHAIN GATE (TYPE CL-1.8)	EA	1		
213	820107	DELINEATOR (CLASS 1)	EA	150		
214	019467	CONCRETE BARRIER MARKER	EA	156		
215	820141	OBJECT MARKER (TYPE K-1)	EA	1		
216	019468	OBJECT MARKER (TYPE Q)	EA	6		
217 (S)	832002	METAL BEAM GUARD RAILING (STEEL POST)	M	720		
218 (S-F)	833032	CHAIN LINK RAILING (TYPE 7)	M	4		
219 (F)	833125	CONCRETE BARRIER (TYPE 25)	M	3267		
220 (F)	833165	CONCRETE BARRIER (TYPE 27B MODIFIED)	M	120		

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
221 (F)	833187	CONCRETE BARRIER (TYPE 27 MODIFIED)	M	471		
222 (F)	048352	CONCRETE BARRIER (TYPE 41)	M	565		
223 (S-F)	048353	BARRIER MOUNTED BRIDGE RAILING	M	591		
224 (S-F)	048354	PEDESTRIAN RAILING	M	584		
225 (S)	839559	TERMINAL SYSTEM (TYPE ET)	EA	1		
226 (S)	839565	TERMINAL SYSTEM (TYPE SRT)	EA	15		
227 (S)	839591	CRASH CUSHION, SAND FILLED	EA	2		
228	839701	CONCRETE BARRIER (TYPE 60)	M	140		
229	839702	CONCRETE BARRIER (TYPE 60A)	M	1215		
230 (F)	839704	CONCRETE BARRIER (TYPE 60D)	M	300		
231 (S)	840515	THERMOPLASTIC PAVEMENT MARKING	M2	325		
232 (S)	840561	100 MM THERMOPLASTIC TRAFFIC STRIPE	M	14 550		
233 (S)	840563	200 MM THERMOPLASTIC TRAFFIC STRIPE	M	1925		
234 (S)	840571	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 5.18 M - 2.14 M)	M	91		
235 (S)	850101	PAVEMENT MARKER (NON-REFLECTIVE)	EA	3300		
236 (S)	850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	1860		
237 (S)	860201	SIGNAL AND LIGHTING	LS	LUMP SUM	LUMP SUM	
238 (S)	019469	LIGHTING STAGE CONSTRUCTION-LOCATION 1	LS	LUMP SUM	LUMP SUM	
239 (S)	019470	LIGHTING STAGE CONSTRUCTION-LOCATION 2	LS	LUMP SUM	LUMP SUM	
240 (S)	019471	LIGHTING AND SIGN ILLUMINATION AND TRAFFIC OPERATIONS SYSTEM STAGE CONSTRUCTION- LOCATION 3	LS	LUMP SUM	LUMP SUM	

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
241 (S)	019472	SIGNAL AND LIGHTING STAGE CONSTRUCTION-LOCATION 4	LS	LUMP SUM	LUMP SUM	
242 (S)	860462	LIGHTING (LOCATION 2)	LS	LUMP SUM	LUMP SUM	
243 (S)	860551	LIGHTING AND SIGN ILLUMINATION (LOCATION 1)	LS	LUMP SUM	LUMP SUM	
244 (S)	019473	CAMERA UNIT	EA	1		
245 (S)	019474	PAN/TILT UNIT	EA	1		
246 (S)	019475	CAMERA CONTROL UNIT	EA	1		
247 (S)	019476	VIDEO ENCODER UNIT	EA	1		
248 (S)	019477	INTEGRATED SERVICE DIGITAL NETWORK TERMINAL ADAPTER	EA	1		
249 (S)	019478	CLUSTER CONTROLLER FOR MICROWAVE VEHICLE DETECTION SENSOR SYSTEM	EA	1		
250 (S)	019479	ANALOG DATA STATION TERMINATION	EA	1		
251 (S)	019480	TRAFFIC OPERATIONS SYSTEM (LOCATION-1)	LS	LUMP SUM	LUMP SUM	
252 (S)	019481	TRAFFIC OPERATIONS SYSTEM (LOCATION-2)	LS	LUMP SUM	LUMP SUM	
253 (S)	019482	TRAFFIC OPERATIONS SYSTEM (LOCATION-3)	LS	LUMP SUM	LUMP SUM	
254 (S)	019483	CALLBOX SYSTEM	LS	LUMP SUM	LUMP SUM	
255 (S)	869072	SEISMIC MONITORING SYSTEM	LS	LUMP SUM	LUMP SUM	
256 (S)	048355	INSTALL SEISMIC MONITORING CASING	M	184		
257	BLANK					
258	020059	50 MM PERFORATED PLASTIC PIPE	M	1571		
259	020060	50 MM PLASTIC PIPE	M	272		
260	BLANK					

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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
261	020131	REMOVE CHAIN LINK GATE	EA	3		
262	193001	STRUCTURE BACKFILL	M3	22 600		
263	020132	STRUCTURE BACKFILL (TYPE E)	M3	20 500		
264	685062	150MM ALTERNATIVE PIPE UNDERDRAIN	M	230		
265	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

ADDED PER ADDENDUM NO. 2 DATED OCTOBER 20, 2000

ENGINEER'S ESTIMATE
04-013054

TOTAL BID (A): = _____

TOTAL BID (B):

$ 35,000.00 x _____ = _____

(Cost Per Day) (Working Days Bid For Phase II Work)
(Not To Exceed 610 Days)

BASIS FOR COMPARISON OF BIDS:

(A) + (B) = _____

Notes:

1. TOTAL BID (A) is the grand total of the Item Totals in the Engineer's Estimate.

2. Working Days Bid is defined in the Special Provisions.